66368
SOV/120-59-5-11/46

A New Form of Electron-optical Chronography

is claimed to be possible.
Ye.K. Zavoyskiy is thanked for valuable discussions.
There are 2 figures and 6 references, 5 of which are Soviet and 1 English.

SUBMITTED: September 8, 1958

4

Card 5/5

BUTSLOV, M.M.; ZAVOSKIY, Ye.K.; PLAKHOV, A.G.; SMOLKIN, G. Ye.; FANCHENKO, S.D.

Electron optical method of the photography of ultrahigh-speed processes. Usp.nauch.fot. 6:84-89 '59. (MIRA 13:6)
(Electron optics)
(Photography, Instantaneous--Scientific applications)

FANCHENKO, S.D.

S/056/60/039/01/09/029
B006/B070

AUTHORS: Demidov, B. A., Fanchenko, S. D.

VC

TITLE: The Observation of Relativistic Charged Particles in the Luminescence Chamber 79

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 1 (7), pp. 64-66

TEXT: The recording of particles by means of luminescence chamber and some related works (Ye. K. Zavoyskiy and others) are briefly mentioned in the introduction. Then the authors report on their observations of singly charged particles with minimum ionization in a luminescence chamber and the determination of the density of their tracks. Fig. 1 schematically shows the arrangement when an NaI(Tl) crystal of 7 cm diameter and ~1 cm thickness was used. Fig. 2 shows photographs of some of the tracks out of a total of 1000 photographs. For the determination of the track density of the muons of cosmic radiation, special experiments were made with a three-counter telescope set in coincidence. These counters are denoted in Fig. 1 by K_1, K_2 and K_3. Between K_1 and K_3

The Observation of Relativistic Charged Particles in the Luminescence Chamber

S/056/60/039/01/09/029
B006/B070

there was a lead absorber of 115 g/cm^2. Some details of the experimental arrangement and measuring processes are given. In conclusion, the authors thank Ye. K. Zavoyskiy for advice and discussions, and L. S. Danelyan and V. V. Skiyarevskiy for the preparation of the crystals. There are 2 figures and 7 references: 6 Soviet and 1 CERN.

SUBMITTED: March 17, 1960

Card 2/2

S/120/61/000/001/001/062
E032/E114

AUTHOR: Fanchenko, S.D.

TITLE: Problems in the Accurate Measurement of Time and Investigations of Processes of Ultrashort Duration. A Review.

PERIODICAL: Pribory i tekhnika eksperimenta, 1961, No.1, pp. 5-15

TEXT: Experiments concerned with the accurate measurements of time can be largely divided into two groups: 1) measurement of relatively long intervals of time with a high relative accuracy, and 2) measurement of time with a high absolute accuracy, i.e. observations of exceedingly short intervals of time. This review is concerned with methods belonging to both of these groups but more attention is paid to those in the second group. The subject matter is featured under the following subject headings: 1) time microscopy (oscillographs, optical chronography, time resolution, photoelectron-optical methods); 2) statistical methods of measuring short time intervals (meson lifetimes, nuclear lifetimes, excited state lifetimes). The review consists largely

Card 1/2

S/120/61/000/001/001/062
E032/E114

Problems in the Accurate Measurement of Time and Investigations of Processes of Ultrashort Duration. A Review.

of brief references to the papers quoted at the end.

There are 5 figures and 35 references: 26 Soviet and 9 non-Soviet.

SUBMITTED: November 30, 1960

Card 2/2

20450
S/056/61/040/002/001/047
B113/B214

9,3150 (1049, 1140, 1532)
24.2120 (1395, 1482, 1138)

AUTHORS: Demidov, B. A., Skachkov, Yu. F., Fanchenko, S. D.

TITLE: Expansion of a channel of very low intense sparks

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 2, 1961, 385-390

TEXT: It has been shown in earlier papers that the initial expansion of a spark channel is caused by a shock wave originating from the heating and ionization of the gas in the channel. In the present paper, it is also cleared up that the initial rate of expansion of a channel depends on the inductivity of the discharge circuit, which increases with increasing $(dI/dt)_0$. In the present paper, only the initial stages of expansion of a channel are studied for the case of a discharge circuit with large dI/dt in the following substances: oxygen and nitrogen (pressure up to 10 atm), deuterium (13 atm), and hydrogen (20 atm). In the discharge circuit, either a disk capacitor of capacitance 30 $\mu\mu$F was used when the period of characteristic oscillations was $2 \cdot 10^{-9}$ sec, or a coaxial capacitor of capacitance 6300 $\mu\mu$F. The full inductivity of the

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two discharge circuits was 3 and 7 cm, respectively. Unlike the other papers which were based on a fast photographic apparatus with rotating film or mirror and having a time resolution of up to $3 \cdot 10^{-8}$ sec, the expansion of the spark channel was observed here by electron-optical chronography insuring a time resolution of 10^{-10} sec. The photographs of the spark channel in the case of the disk capacitor showed a periodic change of the light in the spark channel, which is produced by the characteristic oscillations of the discharge circuit. In hydrogen, these alterations in luminosity were observed in the total interval of initial pressure ($2 \div 20$ atm), while in nitrogen they were clear only at pressures higher than 6 atm and not at all observed at pressures lower than 4 atm. Furthermore, many cases of branching of the channel and asymmetry of expansion of the channel were observed in nitrogen. The highest initial rate of expansion was observed in the first quarter of the period of characteristic oscillations of the discharge circuit, during which the expansion rate was observed to vary from one case to another, even for the same initial conditions of discharge. In nitrogen, the initial rate of expansion was observed to be up to $6 \cdot 10^{6}$ cm/sec, and the same was the

Expansion of a channel...

case in oxygen; the highest rate of expansion in deuterium (13 atm) was $7 \cdot 10^6$ cm/sec, and in hydrogen $8 \cdot 10^6$ cm/sec. With the help of a coaxial capacitor, hydrogen and nitrogen were studied at pressures between 1 and 18 atm; the maximum rate of expansion in nitrogen was found to be $2.5 \cdot 10^6$ cm/sec, and that in hydrogen $6 \cdot 10^6$ cm/sec. From a comparison of the initial rates of expansion for the cases of disk and coaxial capacitors it was established that the rate depends on the quantity $(dI/dt)_0$. As in these experiments the shock waves were not recorded by the method of Teppler, it was not possible to observe experimentally the separation of the shock wave from the channel. There is no doubt, however, that the initial stage observed here precedes it. On the other hand, simple estimates show that in these experiments the current and the magnetic field of the plasma itself are insufficient for the pinch effect in the channel. Assuming complete ionization of the gas behind the front of the shock wave, the temperature in the front of the wave in hydrogen is given by

$$T_\phi^{\cdot} = 3{,}95\,(D/9 \cdot 10^6)^2 \left[1 - (9 \cdot 10^6/D)^3 + \sqrt{1 + \tfrac{2}{3}(9 \cdot 10^6/D)^3} \right], \quad (1$$

Card 3/4

Expansion of a channel...

where T_Φ is given in ev, and D is the velocity of the shock wave in cm/sec. According to (1), T_Φ = 3.5 ev for D = $8 \cdot 10^6$ cm/sec, and in the case of deuterium T_Φ = 8 ev for D = $7 \cdot 10^6$ cm/sec. The temperature and density in the channel (hydrogen) were calculated on the basis of the hydrodynamical theory of spark channels, whose fundamentals were developed by S. I. Drabkina and S. I. Braginskiy (Ref. 17: S. I. Braginskiy ZhEtF, 34, 1548, 1958). The results obtained were T_K = 22 ev and n_K = $3 \cdot 10^{20}$ cm^{-3} (density in the channel). Ye. K. Zavoyskiy is thanked for advice and interest in the work, and S. I. Braginskiy and S. L. Mandel'shtam for discussions. V. S. Komel'kov, D. S. Parfenov, and N. S. Sukhodrev are mentioned. There are 4 figures, 1 table, and 17 references: 11 Soviet-bloc and 6 non-Soviet-bloc.

SUBMITTED: June 3, 1960

Card 4/4

S/120/62/000/001/023/061
E140/E463

AUTHORS: Demidov, B.A., Ivanov, G.A., Fanchenko, S.D.

TITLE: Fanchenko multi-stage electron-optical image-converter pulse control circuits

PERIODICAL: Pribory i tekhnika eksperimenta, no.1, 1962, 102-107

TEXT: Two operating modes are available for a multi-stage electron-optical image converter - with leading synchronization and with lagging. These instruments are used for studies of luminescent chambers, arcs, arc counters, plasma physics, etc. For leading synchronization a linear time base 0.1 to 15 μs and symmetrical pulse generator for compensation of the electrostatic shutter (0.2 μs exposure time) are available. For lagging synchronization two types of synchronization pulse selection are available, with artificial insensitive time (0.1 to 10 sec). Output is to a photographic apparatus shifting the film forward one frame for each operation of the image converter shutter. The time resolution of the system is of the order of 10^{-10} sec. The artificial insensitive time is useful in examination of randomly occurring events. Vacuum tube circuits are used throughout.

Card 1/2

S/120/62/000/001/023/061
E140/E463

Fanchenko multi-stage ...

There are 6 figures.

SUBMITTED: May 17, 1961

Card 2/2

S/056/62/042/005/050/050
B108/B138

AUTHORS: Demidov, B. A., Skachkov, Yu. F., Fanchenko, S. D.

TITLE: Re. S. I. Andreyev's and M. P. Vanyukov's comment on the paper "Widening of the channel of powerful miniature sparks"

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 5, 1962, 1427-1429

TEXT: Criticism levelled by S. I. Andreyev and M. P. Vanyukov (ZhETF, 42, 309, 1962) at a paper by the authors (ZhETF, 40, 385, 1961) is denied. The present authors had observed hydrodynamic widening of spark channels. On the basis of the results of R. F. Saxe (Brit. J. Appl. Phys., 7, 336, 1956), Andreyev and Vanyukov had asserted that the authors had only seen streamers by the observation slit. Here it is shown that such a thing was not possible since the duration of streamers is considerably less than the time resolution of the experiment. There are 2 figures.

SUBMITTED: January 22, 1962

Card 1/1

ACCESSION NR: AP4019212 S/0056/64/046/002/0497/0500

AUTHORS: Fanchenko, S. D.; Demidov, B. A.; Yelagin, N. I.; Ryutov, D. D.

TITLE: Energy absorption due to sausage instability of a plasma in a toroidal system

SOURCE: Zhurnal eksper. i teor. fiz., v. 46, no. 2, 1964, 497-500

TOPIC TAGS: plasma, toroidal plasma, plasma instability, plasma resistance, anomalous plasma resistance, active plasma resistance, sausage instability, two stream instability, collisionless plasma

ABSTRACT: A toroidal plasma installation is described, intended to test the feasibility of using sausage instability for the dissipation of the energy of the external electric field in a collisionless plasma of toroidal configuration. Comparison of the plasma current and field oscillograms has shown that the plasma resistance is purely active, which leads to an anomalously high electron colli-

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ACCESSION NR: AP4019212

sion frequency in the plasma (10^9 vs. the theoretically expected 10^6 cps); this in turn can be attributed only to the occurrence of sausage instability. From the active character of the plasma it is also possible to calculate that the high frequency field delivers an energy of 3 keV per particle to the plasma. "The authors are grateful to Ye. K. Zavoyskiy, Ye. P. Velikhov, and L. I. Rudakov for valuable advice and discussions, and also to A. Ye. Bazhenov and M. K. Volodin for help with preparing and adjusting the equipment." Orig. art. has: 3 figures and 3 formulas.

ASSOCIATION: None

SUBMITTED: 05Aug63 DATE ACQ: 27Mar64 ENCL: 01

SUB CODE: PH NO REF SOV: 005 OTHER: 004

Card 2/3

L 1123-66 EWT(1)/EWA(h)

ACCESSION NR: AP5016392 UR/0120/65/000/003/0177/0182
621.383.8

AUTHOR: Demidov, B. A.; Smolkin, G. Ya. Sotnikov, V. M.; Sofiyev, G. N.; Fanchenko, S. D.

TITLE: Internal-noise spectrum and gain dispersion of multistage image-converter tubes

SOURCE: Pribory i tekhnika eksperimenta, no. 3, 1965, 177-182

TOPIC TAGS: image converter

ABSTRACT: To eliminate the fringe effect in measuring the internal-noise spectrum, a special method was used which permitted opening the input of a multichannel differential analyzer only for the pulses whose images did not extend beyond the isolated area on the type 95 image-tube screen. It was found that: (1) The noise distribution is exponential (curves supplied) and (2) The gain dispersion of an image-converter tube operating on the principle of optical contact between the luminescent screen and the adjacent photocathode is described by a Poisson-type distribution of the output pulses. "The authors wish to thank Ye. K. Zavoyskiy for discussing the work; L. Z. Dzhilavyan for carrying out preliminary

Card 1/2

L 1123-66

ACCESSION NR: AP5016392

4

measurements, M. M. Butslov for lending image tubes, Yu. L. Sokolov for lending optical instruments, and A. A. Mitin for his assistance in aligning the analyzer.# Orig. art. has: 4 figures and 1 table.

ASSOCIATION: Institut atomnoy energii GKAE, Moscow (Institute of Atomic Energy, GKAE)

SUBMITTED: 22Apr64 ENCL: 00 SUB CODE: EC

NO REF SOV: 013 OTHER: 005

Card 2/2

FANCHENKO, S.D.

Studies on the problem of controlled thermonuclear synthesis. Atom. energ. 18 no.3:258-260 Mr '65.

(MIRA 18:3)

STEKOL'NIKOV, V.V.; ORIGOR'YANTS, A.N.; FANCHENKO, S.D.

Atomic power plants in Italy. Atom. energ. 18 no.6:662-664 Je '65.
(MIRA 18:7)

L 52-65 EWT(1)/EPA(sp)-2/EPA(w)-2/EEC(t)/T/EWA(m)-2 Pz-6/Pr0-4/Pab-10/Pi-4
IJP(c), AT

ACCESSION NR: AP5006492 S/0056/65/048/002/0454/0463

AUTHOR: Demidov, B. A.; Yelagin, N. I.; Ryutov, D. D.; Fanchenko, S. D. 63 B

TITLE: Anomalous resistance and microwave radiation of a plasma in a strong electric field

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 48, no. 2, 1965, 454-463

TOPIC TAGS: plasma, plasma wave, plasma oscillation, plasma resistance, plasma microwave, plasma microwave radiation, anomalous plasma resistance

ABSTRACT: A theoretical and experimental investigation is made of the phenomenon of the anomalous resistance of a plasma in a strong electric field parallel to the containing magnetic field. This phenomenon has been ascribed to bunching instabilities which appear at certain current and thermal velocities of the electrons. The density of the plasma considered was 10^{11} to 10^{12} cm^{-3}, and the amplitude of the high-frequency electric field was in the 10 to 100 v/cm range. With the thermal velocity of the ions small in comparison with the phase velocities of the waves, the absorption of waves by the ions was kept at a minimum. Since the fast waves could not be contained in a discharge chamber only 3 cm in diameter with a longitudinal magnetic field of about 3 kG, the dissipated energy depended on the ratio

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L 31753-65
ACCESSION NR: AP5006492

of the absorption of the waves by the electrons and the escape of waves beyond the chamber walls. The analysis showed that, when the absorption of waves by the chamber walls exceeds the absorption by plasma, an anomalous resistance of collisionless plasma should be observed. The dependence of the discharge current on the electric field intensity was essentially linear (in the 10—70 v/cm range) and at higher field intensities agreed with the theoretical findings concerning the anomalous resistance. The transverse velocities of the electrons reached an energy of about 10^3 ev; those of the ions attained 10^2 ev. The relatively high energy of the electrons is explained by the absorption of Langmuir waves, while the lower ion energy is attributed to the escape of the faster ions resulting from the small chamber dimensions and the low intensity of the containing magnetic field. The experiments confirmed plasma microwaves as the cause of the anomalous resistance. The radiation, detected by a horn antenna placed near the discharge chamber, reached 10 mw. It displayed a deep modulation by the double current frequency in the plasma, with intensity maxima coinciding in time with the current peaks. The microwave signal was strongest during the second half-period. The frequency spectrum of the microwaves covered wavelengths from 3.5 to 7 cm and more. Measurements were also conducted to establish the character of the decrease of the microwave signal with radial distance from the discharge chamber. The electric field intensity was varied from a minimum up to the point of saturation of the current

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ACCESSION NR: AP5006492

and signal. The usual square root law was found to apply only to the case of high field strength. At low field values, the decrease in signal was better described by an exponential law. Orig. art. has: 8 figures and 15 formulas. [FP]

ASSOCIATION: none

SUBMITTED: 13Jul64 ENCL: 00 SUB CODE: ME

NO REF SOV: 008 OTHER: 001 ATD PRESS: 3199

Card 3/3

L 9682-66 EWT(m)-2/EPA(s)-2/EWT(1)/EPF(c)/ESS(m) IJP(c) AT/GS-4

ACC NR: AT6001404 SOURCE CODE: UR/3180/64/009/000/0175/0183

AUTHOR: Bolotin, V. F.; Demidov, B. A.; Zavoyskiy, Ye. K.; Skachkova, Yu. E.; Smolkin, G. Ye.; Fanchenko, S. D.

ORG: none

TITLE: Further development of the electrooptical chronographic method and its application to physical plasma investigations

SOURCE: AN SSSR. Komissiya po nauchnoy fotografii i kinematografii. Uspekhi nauchnoy fotografii, v. 9, 1964. Vysokoskorostnaya fotografiya i kinematografiya (High-speed photography and cinematography), 175-183 and insert facing page 169

TOPIC TAGS: time measurement, electric discharge, electrooptic image intensifier, plasma diagnostics

ABSTRACT: It was established earlier that the multistage electrooptic converter invented by Prof. M. M. Butslov has a limiting brightness amplification coefficient which allows it to register single photons. Theoretical discussions showed that similar setups can have a resolving time down to 10^{-14} sec and some spark radiation scanning experiments achieved a resolution of $3 \cdot 10^{-12}$. This led to the use of similar devices in electrooptical chronography. This article surveys the principles of operation of electrooptical devices and the results of plasma investigations using electrooptical chronography. The authors cover 1) the methodology of electrooptical chronography, including power feeding and synchronization of multistage electrooptical converters and time scanning of converted images; and 2) physical

L 39662-66

ACC NR: AT6001404

studies of the plasma including processes in spark discharge plasmas (circuit and block diagrams of setups for time scanning, spark channel widening velocity data), use of electrooptical chronography for the study of HF-field interaction with plasma (block diagram of a device for the study of plasma luminosity during magnetoacoustic resonance), and a brief discussion of special features of electrooptical investigation of plasmas. A resonator for the scanning systems was proposed by R. V. Chikin of the Butslov laboratory. Orig. art. has: 11 figures and 1 table.

SUB CODE: 14, 20 / SUBM DATE: none / ORIG REF: 015

Card 2/2

L 12051-66 EWT(1)/ETC(F)/EPF(n)-2/EWG(m) LJP(c) GG/AT

ACC NR: AP6002654 SOURCE CODE: UR/0386/65/002/012/0533/0537

AUTHOR: Demidov, B. A.; Fanchenko, S. D.

ORG: none

TITLE: Search for Raman scattering of electromagnetic waves in the microwave band with the aid of a turbulent plasma

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 2, no. 12, 1965, 533-537

TOPIC TAGS: Raman scattering, microwave plasma, turbulent plasma, plasma electromagnetic wave

ABSTRACT: Since the theory of Raman scattering of electromagnetic waves by the electronic oscillations of a bounded plasma predicts that the Raman-scattering signal can yield very valuable information on the level of the turbulent oscillations, the authors have undertaken a search for scattering, accompanied by a change in frequency, of electromagnetic waves from an external source. The plasma was produced in a toroidal installation described elsewhere (ZhETF v. 48, 459, 1965). A diagram of the experiment is shown in Fig. 1. Radio signals at wavelength $\lambda = 3$ cm, generated by magnetron M, were beamed by the transmitting antenna at a plasma with density $n \sim 10^{11}$--10^{12} cm^{-3}, heated to $T_e = 10^2$--10^3 ev by a current that experi-

Card 1/2

L 12051-66

ACC NR: AP6002654

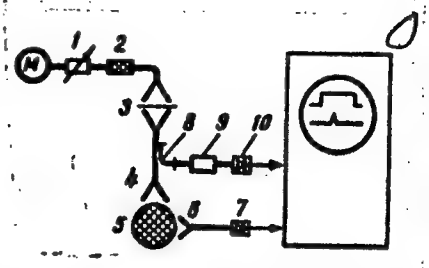

Fig. 1. Diagram of installation. 1 - Attenuator, 2 - ferrite decoupler, 3 - filter, 4 - transmitting antenna, 5 - plasma, 6 - receiving antenna, 6,7 - waveguide, 7 - receiving detector head, 8 - directional coupler, 9 - attenuator, 10 - control detector head.

enced an anomalous active resistance and was accompanied by intense microwave noise with $\lambda > 3.5$ cm. Under these conditions the detector head recorded a signal of 10^{-5} w power, correlated in time with the current. The experiments made it possible to establish that when radio emission with $\lambda_0 = 3$ cm from an external source is incident on a turbulent plasma, Raman scattering in which the frequency change is of the order of ω_{pe} is apparently observed, in accord with the theoretical estimate (A. A. Ivanov and D. D. Ryutov, ZhETF v. 48, 1366, 1965). This is evidence of the high level of the electronic oscillations. Intense maxima were observed in the intrinsic radiation of the plasma in the region $\lambda > 3.5$ cm at frequencies close to ω_{pe}, and a much weaker maximum in the interval $\lambda = 1.5$--2 cm where the frequency $2\omega_{pe}$ is situated. Orig. art. has: 3 figures.

SUB CODE: 20/ SUBM DATE: 28Oct65/ ORIG REF: 007/ OTH REF: 001

Card 2/2

DEMIDOV, B.A.; YELAGIN, N.I.; RYUTOV, D.D.; FANCHENKO, S.D.

Anomalous resistance and superhigh-frequency radiation from a plasma in a strong electric field. Zhur. eksp. i teor. fiz. 48 no.2:454-463 F '65. (MIRA 18:11)

L 06972-67 EWT(1) IJP(c) GG/AT

ACC NR: AP6021529 SOURCE CODE: UR/0089/66/020/006/0516/0518

70
64
B

AUTHOR: Demidov, B. A.; Fanchenko, S. D.

ORG: none

TITLE: Estimate of the degree of turbulence of a plasma from the intrinsic radiation and Raman scattering of the electromagnetic waves in the microwave band

SOURCE: Atomnaya energiya, v. 20, no. 6, 1966, 516-518

TOPIC TAGS: plasma turbulence, plasma radiation, Raman scattering, microwave plasma, electromagnetic wave

ABSTRACT: The authors use an effect observed by them earlier (Pis'ma ZhETF v. 2, 533, 1965), namely Raman scattering of electromagnetic waves by electronic oscillations of a turbulent plasma, to estimate the degree of turbulence of the plasma by means of apparatus described in the earlier paper as well as in ZhETF v. 48, 459, 1965. The energy density of the plasma oscillations in the turbulent plasma is determined by comparing the microwave radiation power from the plasma at double the plasma frequency with the power of a signal corresponding to the violet satellite due to Raman scattering by the plasma oscillations in the electromagnetic waves generated by a pulsed magnetron. A formula for determining the energy density from the experimental data is given, the differential spectra of the violet satellite and of the intrinsic radiation of the plasma are given for several electron densities, and an approximate estimate is obtained for the spectral widths. It is shown that a change in the frequency of the electromagnetic wave due to Raman scattering by the plasma is numerically equal

Card 1/2 UDC: 533.9

ACC NR: AP6021529

to the plasma frequency. The intrinsic radiation of the plasma is double the plasma frequency. The half-width of the spectrum of the violet-satellite frequency is approximately equal to one-quarter the plasma frequency. The authors thank Ye. K. Zavoyskiy for continuous interest, D. D. Ryutov for valuable discussion, and V. Ya. Balakhanov, P. I. Blinov, A. N. Karkhov, and L. L. Kozorovitskiy for supplying individual units of the measuring apparatus. Orig. art. has: 5 formulas and 1 figure.

SUB CODE: 20/ SUBM DATE: 01Feb66/ ORIG REF: 008/ OTH REF: 003

Card 2/2

L 02285-67 EWT(l)/EWT(m)/T IJP(c) AT

ACC NR: AP6025238 SOURCE CODE: UR/0057/66/036/007/1166/1167

53
51
B

AUTHOR: Demidov, B.A.; Fanchenko, S.D.

ORG: none

TITLE: On the investigation of the x radiation from a plasma by means of a scintillation counter

21

19

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 7, 1166-1167

TOPIC TAGS: plasma radiation, x radiation, scintillation counter, phosphorescence

ABSTRACT: In recording the x radiation from the decaying plasma in a toroidal machine with a scintillation counter the authors observed an intense pulse of about one microsecond duration followed by a series of weak short pulses lasting for some 600 microseconds. This effect was observed with CsI, NaI (Te), and stilbene scintillators. U.Grossman-Doerth and J.Junker (Nuclear fusion, Suppl, p.3, 1007,1962) have observed a similar effect and have ascribed the weak pulses to prolonged emission of soft x rays by the decaying plasma. To test this explanation the authors repeated their experiments under such conditions that the magnetic field was cut off after about 100 microsec and found that the weak pulses continued unaltered after the field was cut off. The authors conclude, therefore, that the weak pulses are not due to soft x radiation from the plasma and suggest that they are due to the slow component of the

Card 1/2 UDC: 533.9

L 02285-67

ACC NR: AP6025238

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phosphorescence of the scintillator excited by the very intense initial pulse. The authors thank Ye.K.Zavoyskiy and V.K.Voytovetskiy for valuable discussions.

SUB CODE: 20/ SUBM DATE: 30Aug65/ ORIG. REF: 002/ OTH REF: 006

Card 2/2 vmb

FANAREV, M.I.

Effect of physical education on a decrease of morbidity in young children. Pediatriia no.7:11-15 '62. (MIRA 15:12)

1. Iz Volkhovskoy mezhrayonnoy bol'nitsy Leningradskogo oblasti (glavnyy vrach - kand.med.nauk zasluzhennyy vrach RSFSR O.I. Vaysfel'd, nauchnyy rukovoditel' - zasluzhennyy deyatel' nauki deystvitel'nyy chlen AMN SSSR prof. A.F. Tur).
(LUNGS—DISEASES) (PHYSICAL EDUCATION AND TRAINING)

FANASKERTELI-TSITSISHVILI, Zaza, 15th cent.; SHENGELII, M.

[Book on medicine] Lechebnaia kniga-karabadini. Obrabotka teksta, issledovanie i slovar' M.Shengelii. Tbilisi, Sabchota Sakarvelo, 1959. 386 p. (MIRA 14:11)
(GEORGIA--MEDICINE--DICTIONARIES)

FANCEV, Mladen, ing.; HRASTIC, Drago

Some data on the speed of currents in the Adreatic Sea. Vodoprivreda Jug 2 no.7/8:103-111 '59. (EEAI 10:1)

1. Brodarski institut, Zagreb.
(Adriatic Sea--Ocean currents) (Ships)

SILOVIC, S., prof. inz.; FAICEV, H., inz.

The screw as instrument for the determination of propulsion data.
Brodogradnja 6 no.6:241-253 '66.
1962.

PANCHENKO, D.M., inzhener.

Standards for systems of units. Standartizatsiia. no.5:35-37 S-O '56.
(MIRA 10:1)

1. Komitet standartov, mer i izmeritel'nykh priborov.
(Units--Standards)

IVANOVA, R.A.; MIL'SHTEYN, G.I.; SMIRNOVA, L.B.; PANCHENKO, A.D. (Moskva)

Effect of nocotinic acid on experimental psychosis induced by diethyl amide of lysergic acid. Zhur. nevr. i psikh. 64 no.8:1172-1176 '64. (MIRA 17:12)

TERPLAN, Z., Dr. techn., Prof.; FANCSALI, J.

Some research results concerning cogwheel made of synthetic materials.
Acta techn Hyng 35/36: 415-423 '61

1. Technische Universitat fur Schwerindustrie, Miskolc, Ungarn.

DAVID, Gabor; GYARMATI, Laszlo; FANCZI, Istvan

A simple rapid method for the measurementment of serum cholinesterase activity. Kiserletes Orvostud. 12 no.2:201-206 Ap '60.

1. Magyar Nephadsereg Egeszsegugyi Szolgalata.
(CHOLINESTERASE blood)

FANDERFLIT, Ye.K.

Stratigraphy of Lower Carboniferous sediments in the southern Timan Range according to the data of spore-pollen analysis. Mat. po geol. i pol. iskop. sev.-Zap. RSFSR no.3:19-26 '62. (MIRA 17:12)

FANDERFLOT, Ye. P., VERSHILOVA, P. A., and SEMCHEVA, N. S.

"Concerning the Question of the Future Improvement in Production Technology of Dry Live Brucellosis Vaccines of the Institute of Epidemiology and Microbiology, Academy of Medical Sciences USSR," Proceedings of Inst. Epidem and Microbiol im. Gamaleya 1954-56.

Brucellosis Laboratory, Vershilova, P. A., head, Inst. Epidem and Microbiol im. Gamaleya AMS USSR

SO: Sum 1186, 11 Jan 57.

VERSHILOVA, P.A.; SEMICHEVA, N.S.; FANDERFLIT, Ye.P.

Further technological improvement in the production of the dry living brucellosis vaccine developed by the Institute of Experimental Medicine of the Academy of Sicences of the U.S.S.R. Zhur.mikrobiol. epid. i immun. 27 no.6:51-57 Je '56. (MLRA 9:8)

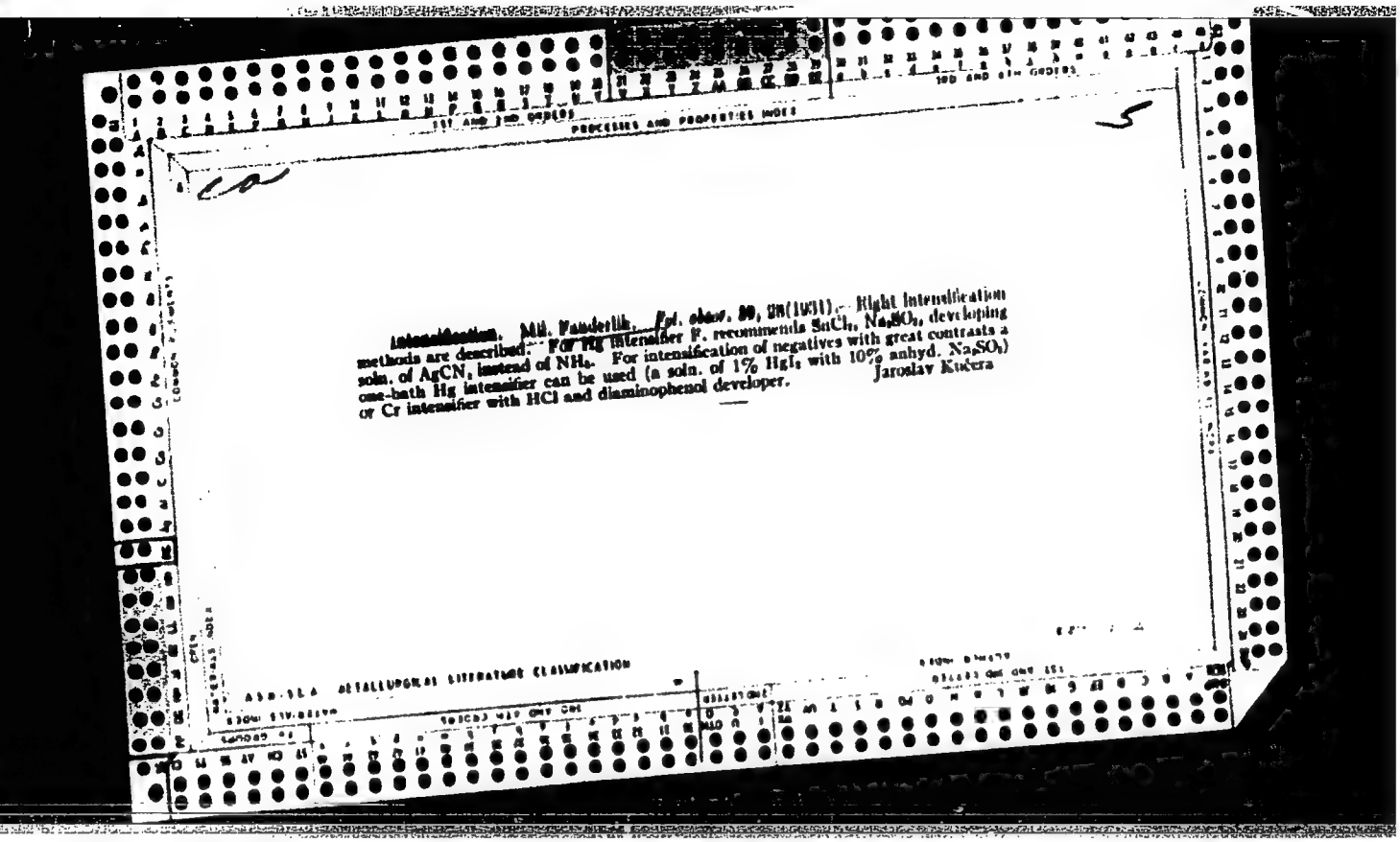
1. Iz Instituta epidemiologii i mikrobiologii imeni N.F.Gamalei AMN SSSR

(VACCINES AND VACCINATION
brucellosis, prod. of dry living vaccine)
(BRUCELLOSIS, immunol.
vaccine, dry living, prod.)

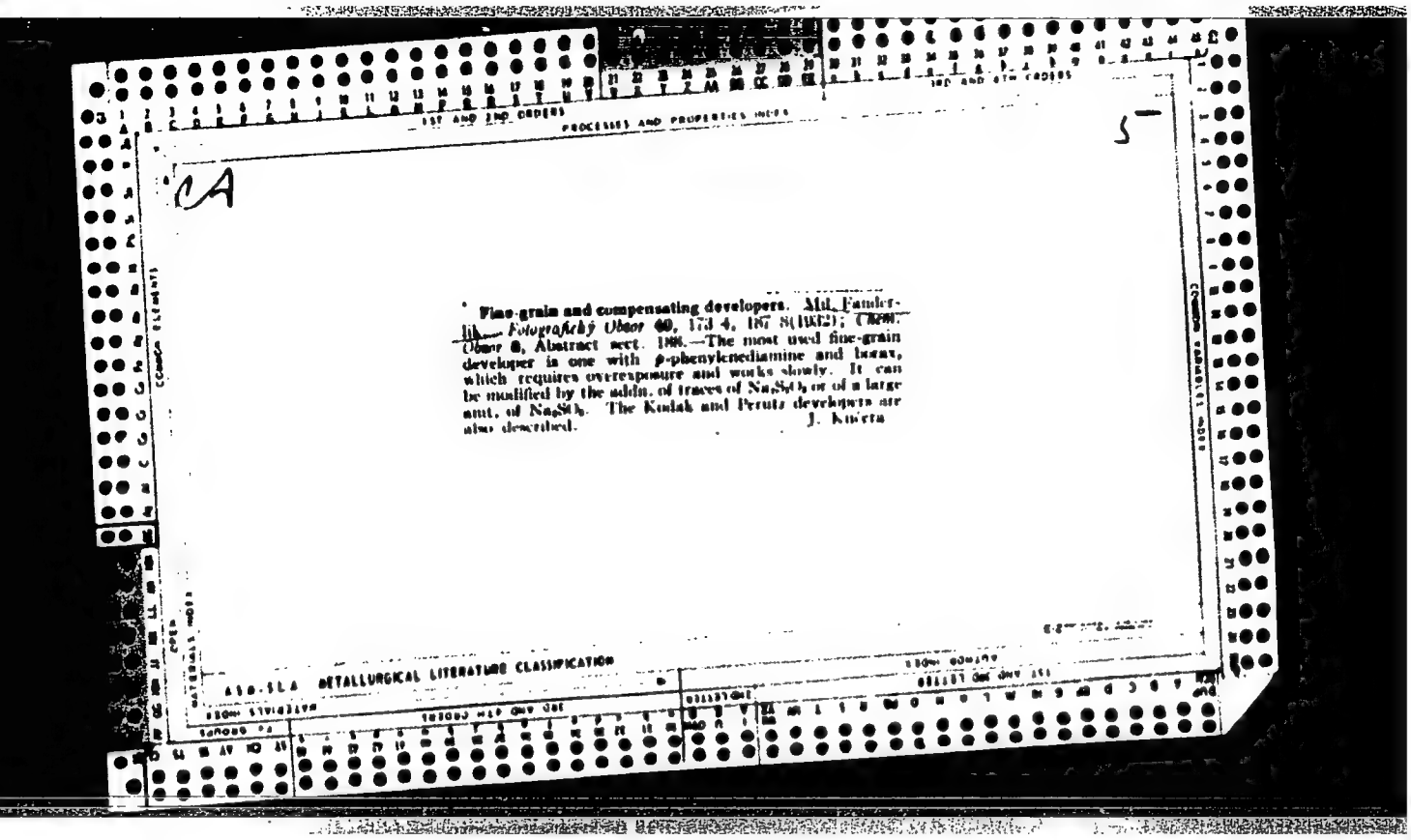
FANDERLIK, Ivan

Study of spectral characteristic changes of Rosal sunglasses in the transformation interval. Sklar a keramik 14 no.12:335-339 D '64.

1. State Research Institute of Glass, Hradec Kralove.



Intensification. Mlle. Vandertik. *Fot. obzor.* **30**, 28(1931).—Eight intensification methods are described. For Hg intensifier F. recommends $SnCl_2$, Na_2SO_3, developing soln. of AgCN, instead of NH_3. For intensification of negatives with great contrasts a one-bath Hg intensifier can be used (a soln. of 1% HgI, with 10% anhyd. Na_2SO_3) or Cr intensifier with HCl and diaminophenol developer. Jaroslav Kučera



CA

S

Fine-grain and compensating developers. Mil. Fauler-lik. *Fotografický Obzor* **40**, 173-4, 187-8(1962); *Chem. Obzor* **8**, Abstract sect. 186.—The most used fine-grain developer is one with *p*-phenylenediamine and borax, which requires overexposure and works slowly. It can be modified by the addn. of traces of Na_2SO_3 or of a large amt. of Na_2SO_3. The Kodak and Perutz developers are also described. J. Kiverta

A59-5L4 METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND CODES

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19

Absorption of the visible spectrum in glass. M. Fanderlik. *Sklářské Rozhledy* 12, 80-8, 115-18(1935); *Chem. Abstracts* 15, 206(1936).—The method and app. used in the Glass Research Station in Hradec Králové, Czechoslovakia are described. Examples of spectral transmission curves demonstrate the characteristic differences between 2 red glasses (Cu_2O and Se), 2 green glasses (CuO and FeO) and between a glass colored with CuO and one with Cu_2O. A characteristic curve for Nd glass (rare earths) is presented. The systematic study of spectral absorption of colored glasses, made in a lab. oven, leads to the detn. of relations between metals, metal oxides, the compn. of glass and the spectral absorption of the same.

M. W. B.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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5

Experiences in toning with thiourea. Mil. Fanderlik. *Fotograf. Obzor* 43, 190–200(1935); *Chem. Obzor* 10, *Abstracts*, 104.—F. bleaches the prints in a soln. contg. 2% $K_3Fe(CN)_6$ and 2% KBr and tones them in a bath contg. 10 cc. of a 5% thiourea soln. and 15–20 cc. of a 5% NaOH soln. in 100 cc. of water. For yellow tones, he replaces the 2% KBr of the bleaching soln. by 1% KI and 1% KBr; for dark brown tones with violet tints he uses 2 g. $K_3Fe(CN)_6$, 4 g. KBr, and 5 cc. of NH_4OH in 100 cc. of water.

Frank Maresh

METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

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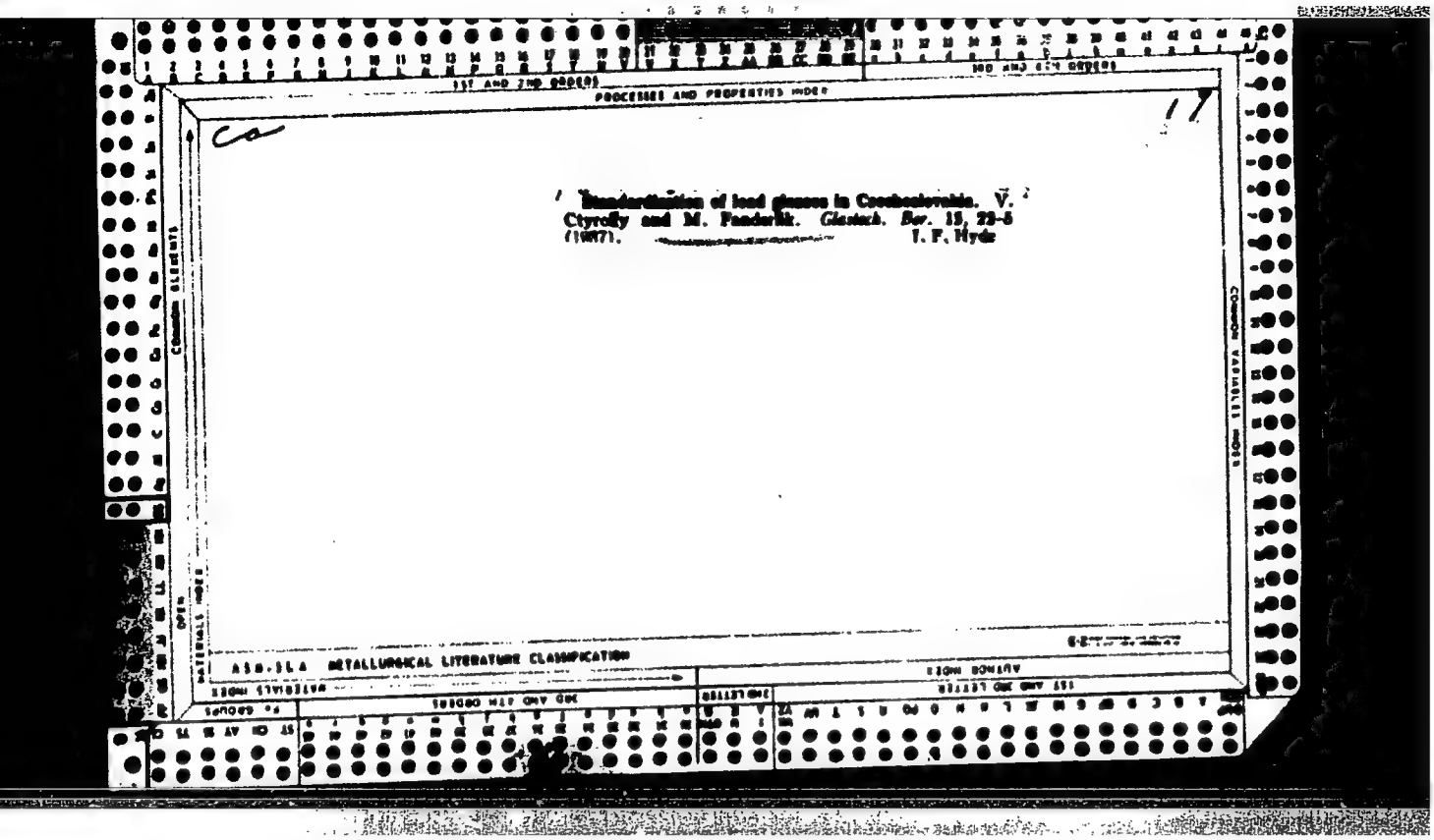
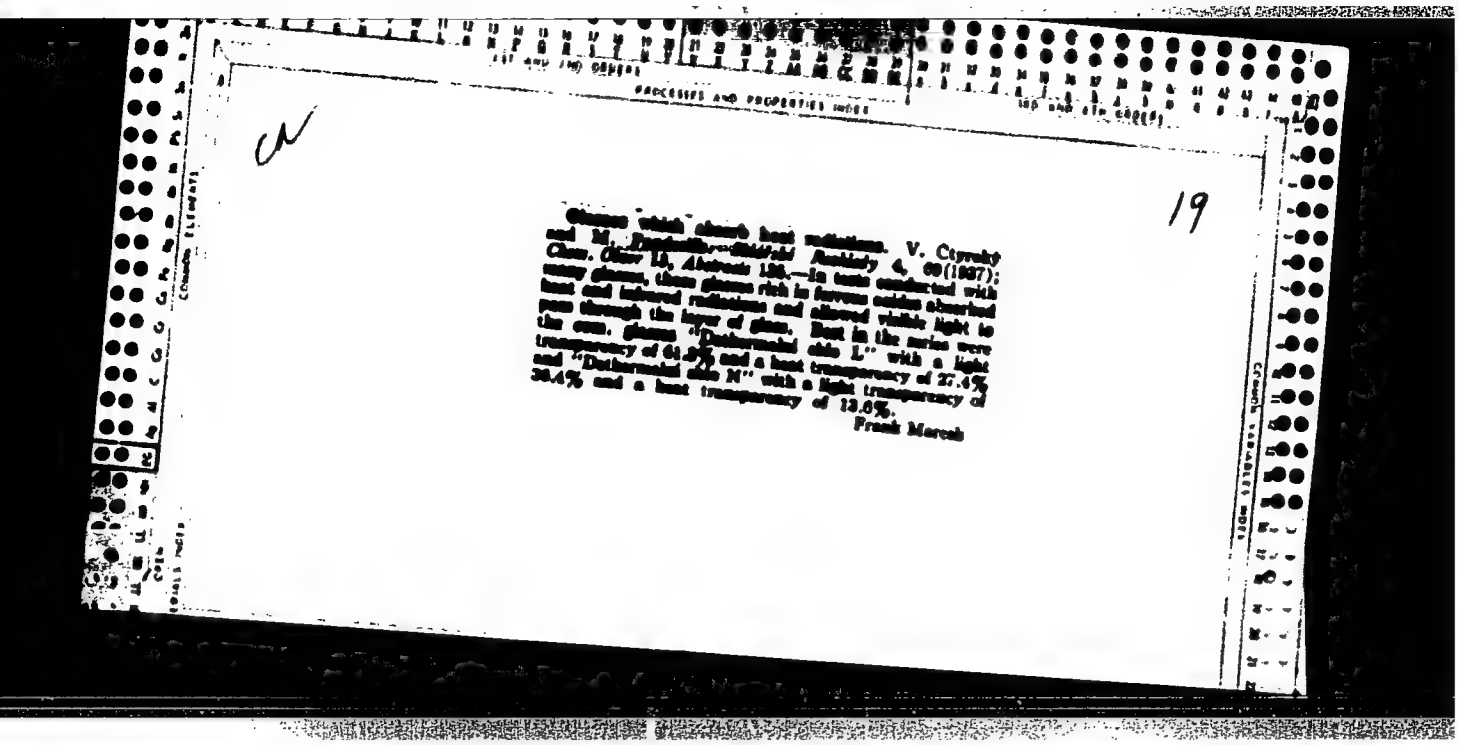
ca

19

The specifications for lead glasses in Czechoslovakia. V. Čypský and M. Pendertk. *Sklářské Rozhledy* 1936, 120; *Chem. Obzor* 12, *Referáty*, 100; cf. *C.A.* 31, 2661[illegible]. —Analyses of glass at the institute showed that the PbO content was not an adequate criterion for evaluating the optical qualities of native or imported glasses. Accordingly the authors det. the *n* and the relative dispersion before they analyze the glass for PbO. Frank Maresh

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION





N

19

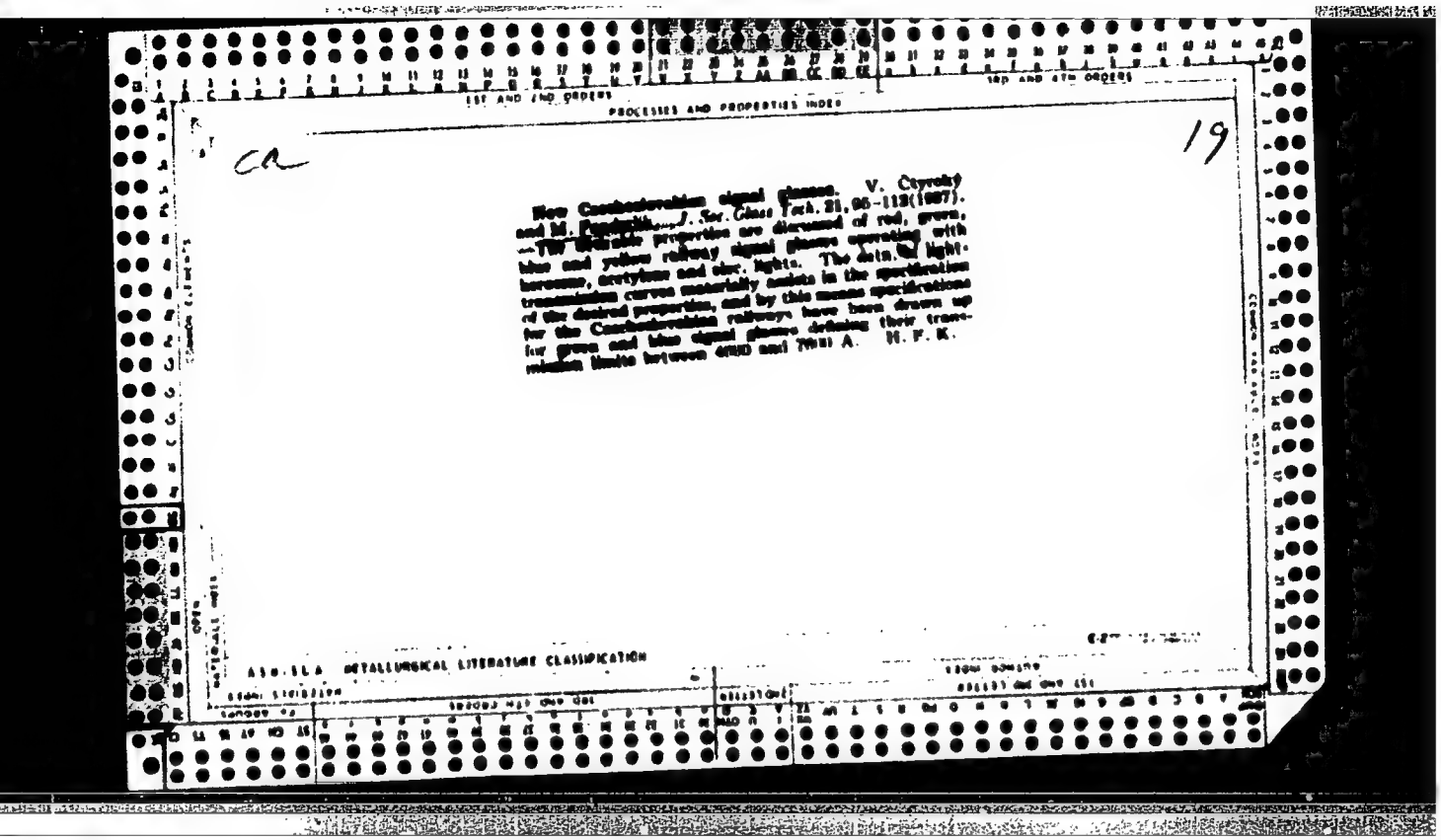
Glasses which absorb heat radiations. V. Czyrsky and M. Drapalik.—Sklářské Rozhledy 4, 69(1957); Chem. Obzor 13, Abstracts 13h.—In order combined with many glasses, those glasses rich in ferrous oxides absorbed heat and infrared radiations and allowed visible light to pass through the layer of glass. Heat in the series were for com. glasses "Dubrovnická skla L" with a light transparency of 61.8% and a heat transparency of 27.4% and "Dubrovnická skla N" with a light transparency of 36.4% and a heat transparency of 13.6%.
Frank Marcus

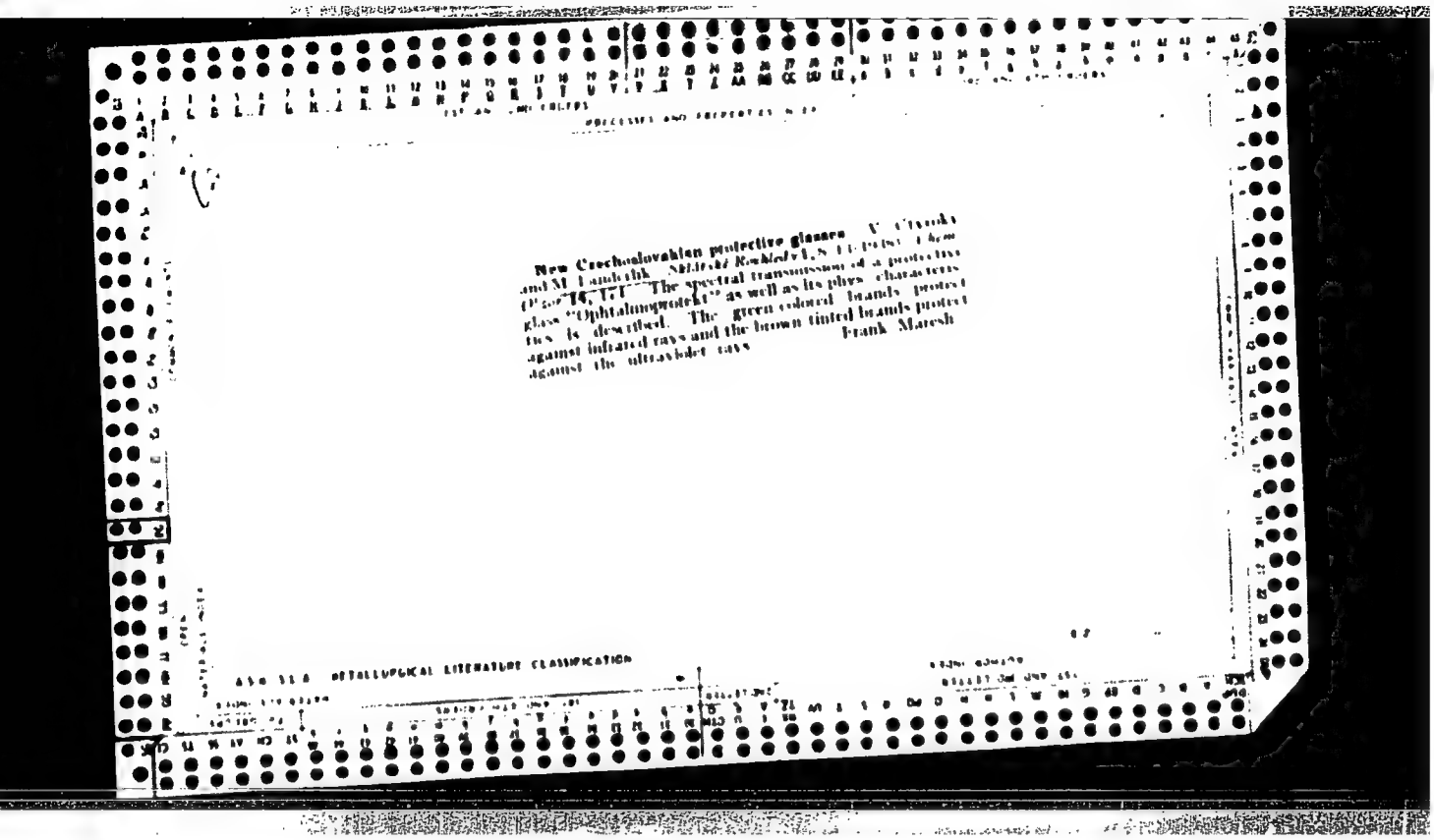
FANDERLIK, M.

FANDERLIK, M. Transformation of glass and its definitions. p. 14.

Vol. 4, No. 1, Jan 1954.
SKLAR A KERAMIK.
TECHNOLOGY
Praha, Czechoslovakia

So: East European Accessions, Vol. 5, No. 5, May 1956





New Czechoslovakian protective glasses

The spectral transmissions of a protective glass "Ophtalmoprotekt" as well as its phys. characteristics is described. The green colored lenses protect against infrared rays and the brown tinted lenses protect against the ultraviolet rays

Frank Maresh

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

19

The transmission of ultraviolet rays by window glass.

V. Čytroký and M. Fanderlik. *Sklářské Rozhledy* 3, 51-8(1938); *Chem. Obzor* 14, 174.—The spectrographic analysis of window glasses prepd. currently in Czechoslovakia and in Austria shows that these glasses are transparent to ultraviolet rays. An arc. spectrum, after passing a 3-mm. thickness of glass, possessed the entire range of Dorn radiations. Window glasses prepd. in Yugoslavia, Belgium and Germany were opaque to the Dorn radiations. The study is not one to compare the glasses manufd. in various countries but to show that common glasses can be prepd. at low prices and can transmit large ranges of ultraviolet radiations.

Frank Maresh

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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19

A microscopic study of diffusing glasses. M. Fanderlik. *Sklářské Rozhledy* **16**, 62-8(1939); *Chem. Zentr.* **1939**, I, 701.—The opal layer of flashed glasses for the production of lighting equipment varied in thickness. For plane specimens the variation was ±7.8%; for globes it was ±3.4%. Of 6 globes measured 4 had the thinnest layer on the upper portion and 3 had the thickest on the lower portion. The no. of turbidity-producing particles per cu. mm. of opal glass was 4.02-12.7 × 10⁹ for sheet glass and 4.0-7.3 × 10⁹ for globes. The no. of such particles varied by ±0.5% at different points. The thickness of these particles was 0.57-0.82 μ for the sheet glass and 0.62-0.90 μ for the globes. The thickness of the particles at various points varied by ±2.4%. The turbidity-producing particles penetrated about 5 microns deep into the crystal layer. The results showed that calcn. by the method of Ryde and Cooper (cf. C. A. 27, 3805) can also be used for opal flashed glasses. M. G. Moore

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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19

Stones in glass. M. Fanderlik. *Sklářské Rozhledy* 16, No. 6, 105-12(1939); *Chem. Zentr.* 1939, II, 2658. These defects are accounted for by difficultly fusible parts of the batch, refractories from the furnace and devitrifications. They are recognized by microscopical or chemical means. A table showing the type, origin and character of these defects is given. M. V. Condoin

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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3RD AND 4TH ORDERS

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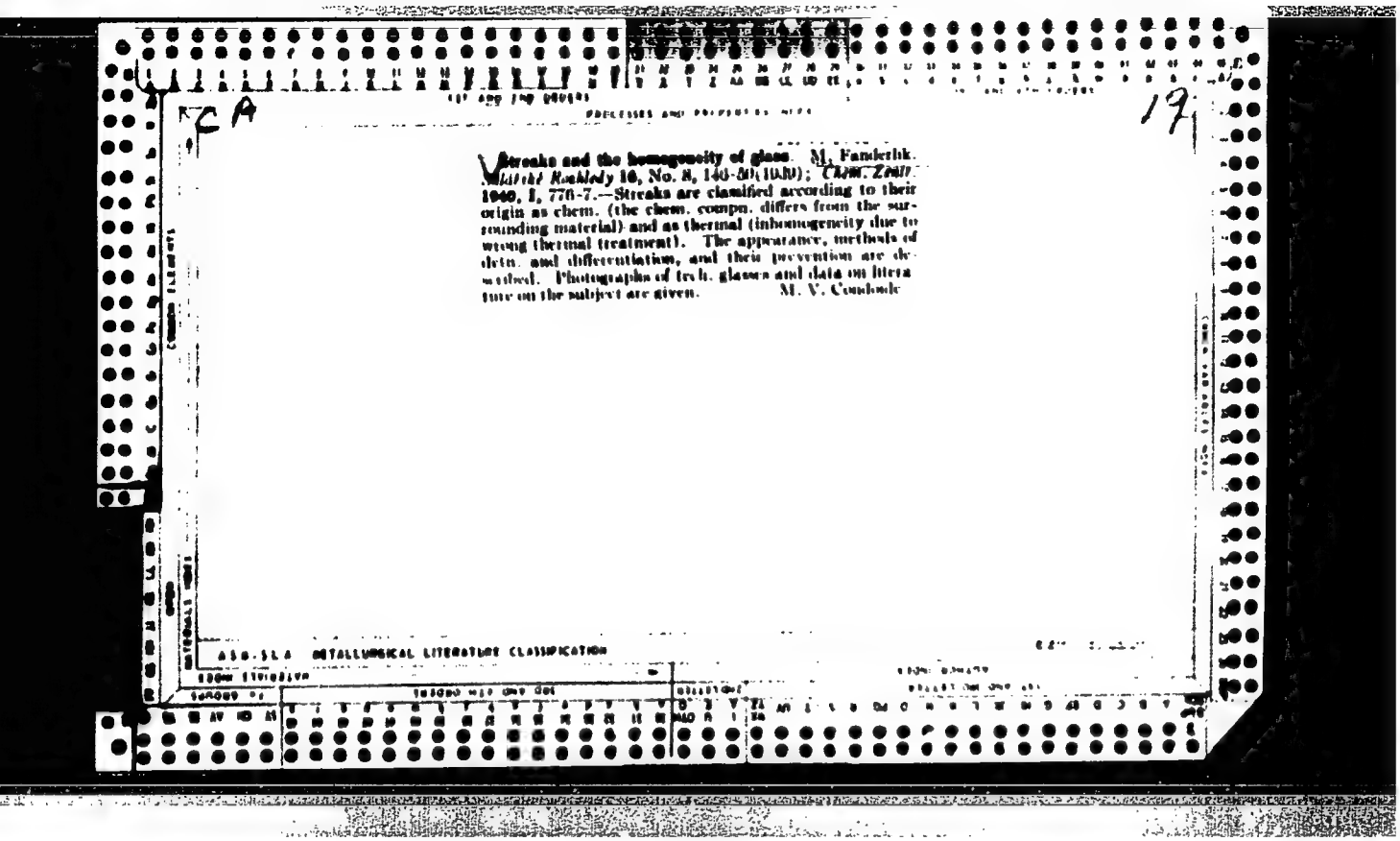
19

Cooling of glass. Milota Fanderlik. *Sklářské Rozhledy* 16, 128-30(1939); *Chem. Zentr.* 1939, II, 4303.—Deformation during cooling produces lasting inner strains if the cooling is rapid. These deformations may be removed only in a definite temp. range, "the cooling interval." The increase of the temp. by 10° within this range means doubling the cooling time for tech. glasses. The cooling time increases approx. with the square of the thickness of the wall of the article. M. V. Condoide

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Streaks and the homogeneity of glass. M. Fanderlik. *Sklář a Keramik* 10, No. 8, 140-50(1960); *Chem. Zentr.* 1960, I, 776-7.—Streaks are classified according to their origin as chem. (the chem. compn. differs from the surrounding material) and as thermal (inhomogeneity due to wrong thermal treatment). The appearance, methods of detn. and differentiation, and their prevention are described. Photographs of tech. glasses and data on literature on the subject are given. M. V. Cookson

AC.S. Sifarlan

Glass annealing: modern methods and lehrs. M. FANDERLIK. *Sklářské Rozhledy*, 19, 6 pp. (1942). The empirical formulas of Adams and Williamson and Lillie's interpretation on the basis of the changes of viscosity with thermal history are reviewed. Modern annealing practice is distinguished from older methods by its main purpose: short and rational annealing yielding not strain-free glass but well-annealed ware of acceptable and regular strain. Experimental work at the Czechoslovak Glass Institute has furthered the introduction of modern lehrs in the industry. A simplified method was worked out to determine annealing schedules that accounts for composition, size, shape, and type of glassware as well as kind and size of lehr. This method has been found useful in practical annealing problems. As examples of modern lehrs, the Hartford and Amco lehrs are described. N. J. K.

A. C. S.

Development of the optical industry in the last 20 years. MILOTA FANDERLIK. *Sklářské Rozhledy*, 19, 81–83 (1942); abstracted in *Chem. Zentr.*, 1942, II [4] 446.—The technical progress in the field of optical glasses, grinding, etc., is reviewed. M.V.C.

A.C.S.

Effect of zirconium oxide on the chemical and thermal properties of glass. M. Fanderlik and Z. Schaffer. *Sklářské Rozhledy*, 20, 41-45 (1943); abstracted in *Chem. Zentr.*, 1943, II (10) 941.—In a glass of 70 SiO_2, 13 Na_2O, 0.5 Al_2O_3, and 12% CaO, the latter was replaced by increasing amounts of ZrO_2. Even with 4% ZrO_2, the glasses do not require a longer melting period at 1430°C.; the viscosity of the glass at this temperature is greater. The softening temperature of glass with 4% ZrO_2 is 25° higher than that of the original glass. This is also true of the transformation temperature, which is about 565°. Thermal expansion drops linearly with increasing ZrO_2 content. Up to 4%, the cubic expansion coefficient (0.9) and the linear expansion coefficient (2.0) can be used for thermal expansion. Chemical resistance of the glass increases with ZrO_2 content; it therefore belongs to the first hydrolytic class. Density increases slightly with ZrO_2: original glass, 2.438; with 4% ZrO_2, 2.483. M.H.s.

1ST AND 2ND ORDERS

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3RD AND 4TH ORDERS

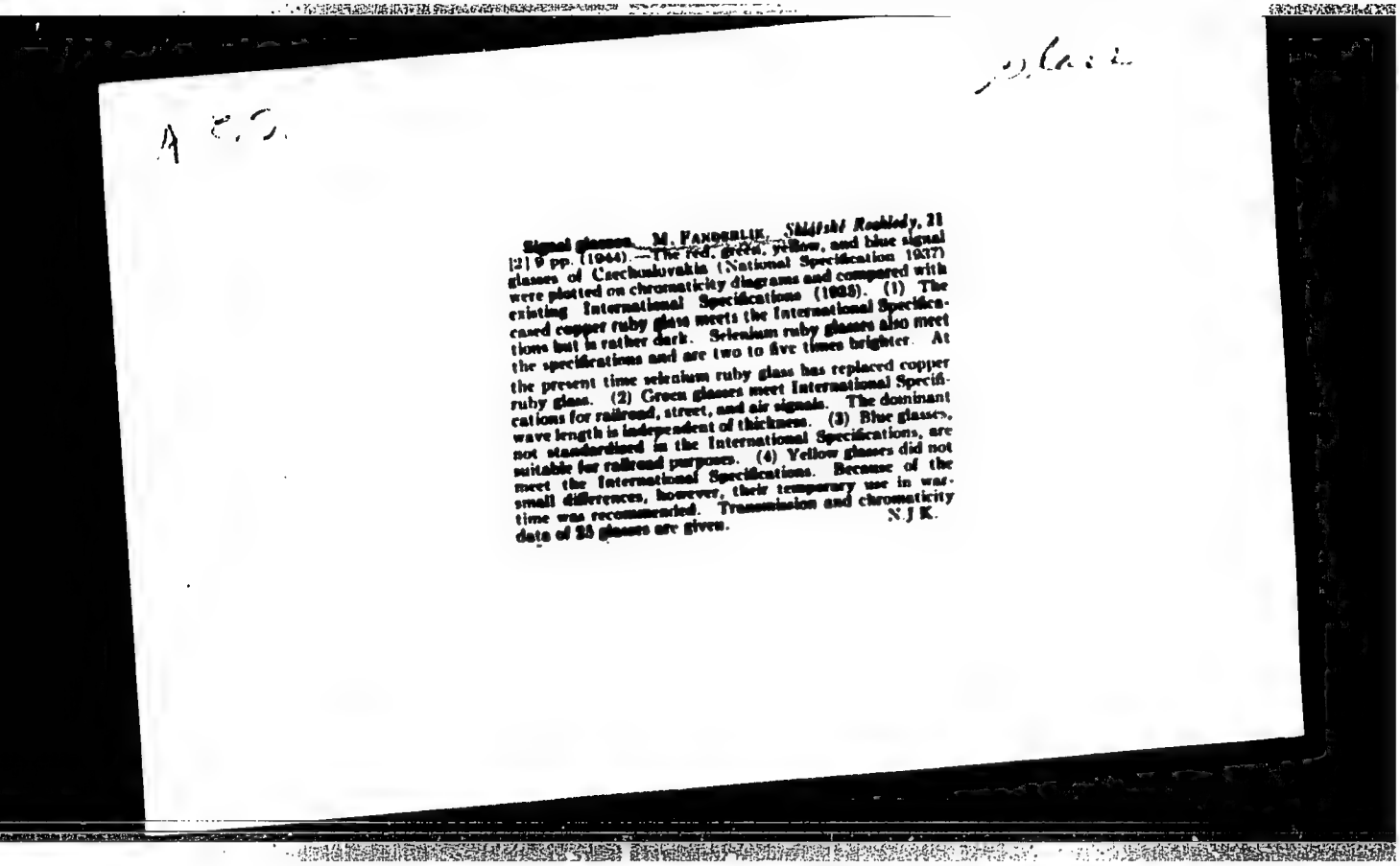
Ca

1

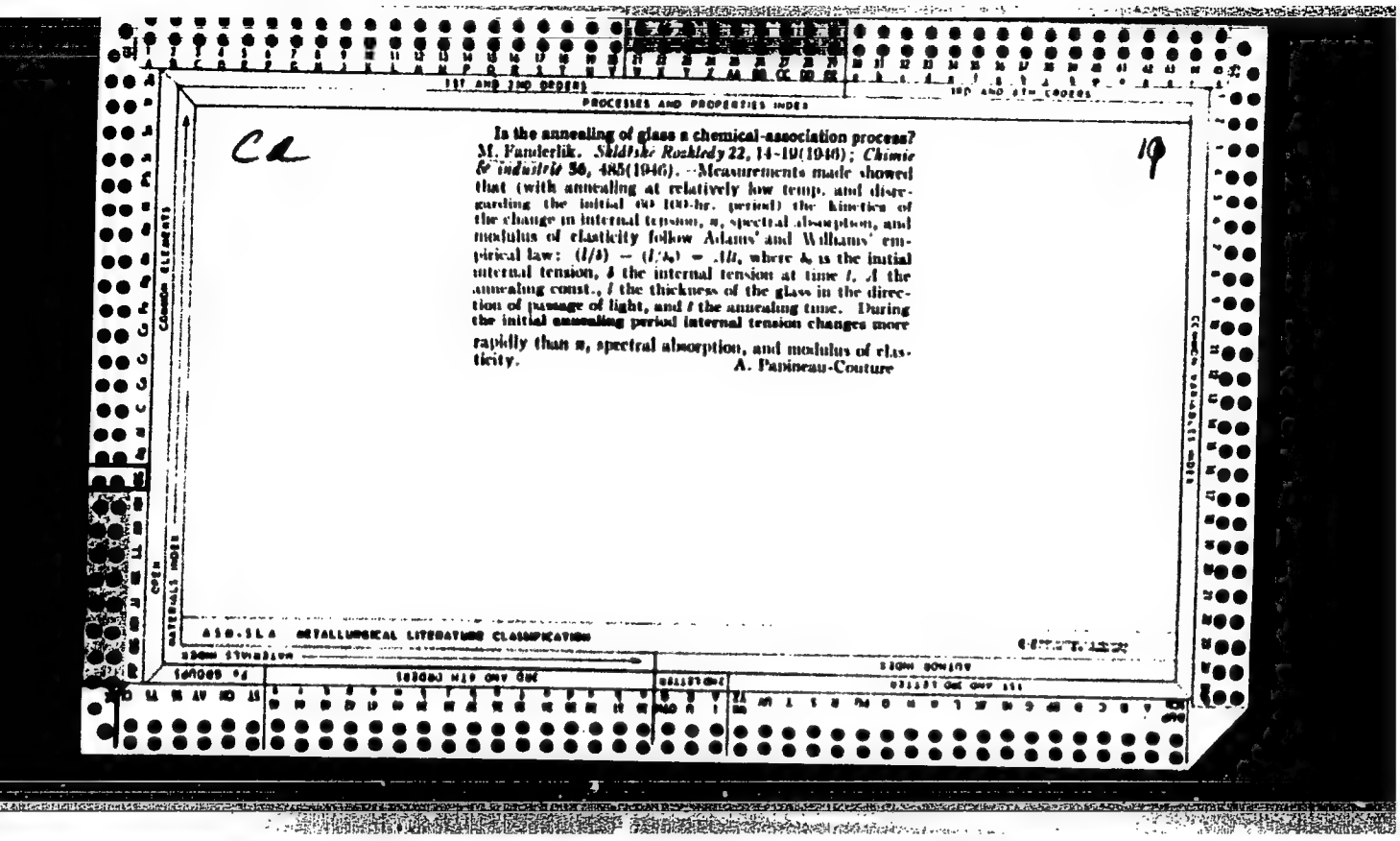
Photoelectric cells and their practical use. Miluta Popovic. Sklář a Keramik 23, 55-6(1943); Chem. Zentr. 1943, II, 1212.—A general discussion of the great importance of the blocking-layer photoelec. cell for scientific and tech. investigations and for glass-factory practice. M. G. Moore

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Glasses colored with Nd_2O_3 and Cr_2O_3. V. ČTYROKÝ AND M. FANDERLIK. *Sklářské Rozhledy*, 20 [7] 121–25 (1943); abstracted in *Chem. Zentr.*, 1944, I [5] 308.—In continuation of former investigations of glasses with Cr_2O_3 and Nd_2O_3 additions, the following results were obtained. Cr_2O_3 addition to Nd_2O_3 glass shifts the tint toward green. In glasses 5 mm. thick the influence of Cr_2O_3 is small, the glass becomes neutral gray, but the effect increases with increasing thickness, producing a green color. The Cr addition makes Nd_2O_3 glass lose its double colorization. See *Ceram. Abs.*, 19 [6] 136 (1940); "Effect . . . ," *ibid.*, 23 [10] 107 (1944). M. Ha.



Signal glasses. M. FANDRLIK. *Sklářské Rozhledy*, 21 [2] 9 pp. (1944).—The red, green, yellow, and blue signal glasses of Czechoslovakia (National Specification 1937) were plotted on chromaticity diagrams and compared with existing International Specifications (1933). (1) The cased copper ruby glass meets the International Specifications but is rather dark. Selenium ruby glasses also meet the specifications and are two to five times brighter. At the present time selenium ruby glass has replaced copper ruby glass. (2) Green glasses meet International Specifications for railroad, street, and air signals. The dominant wave length is independent of thickness. (3) Blue glasses, not standardized in the International Specifications, are suitable for railroad purposes. (4) Yellow glasses did not meet the International Specifications. Because of the small differences, however, their temporary use in wartime was recommended. Transmission and chromaticity data of 25 glasses are given. N J K.



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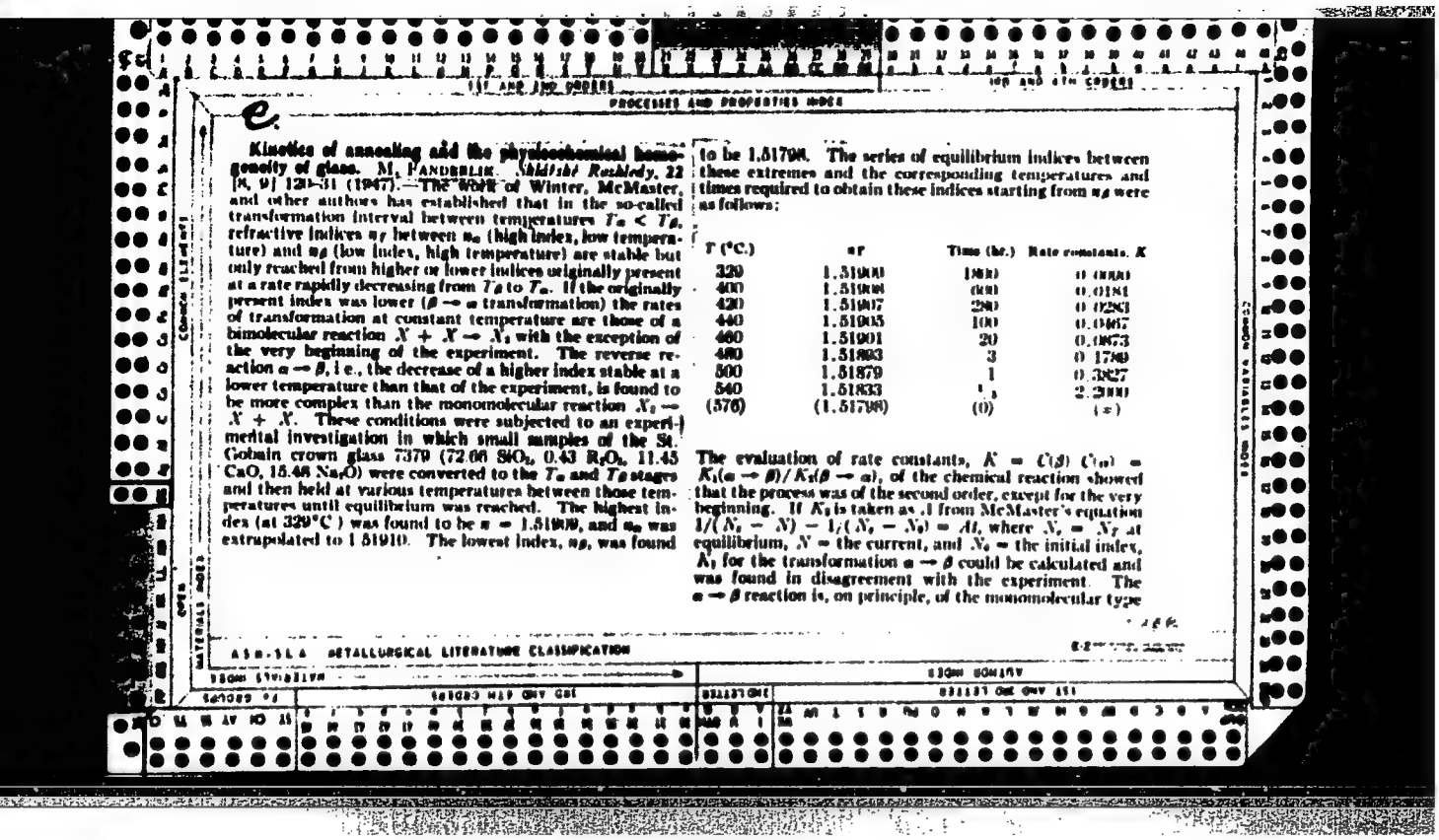
Ca

Is the annealing of glass a chemical-association process? M. Fanderlik. *Skláŕské Rozhledy* 22, 14-19(1946); *Chimie & industrie* 56, 485(1946).—Measurements made showed that (with annealing at relatively low temp. and disregarding the initial 60 100-hr. period) the kinetics of the change in internal tension, n, spectral absorption, and modulus of elasticity follow Adams' and Williams' empirical law: $(1/\delta) - (1/\delta_0) = At$, where δ_0 is the initial internal tension, δ the internal tension at time t, A the annealing const., l the thickness of the glass in the direction of passage of light, and t the annealing time. During the initial annealing period internal tension changes more rapidly than n, spectral absorption, and modulus of elasticity.

A. Papineau-Couture

19



e.

Kinetics of annealing and the physicochemical homogeneity of glass. M. Pandrlik. *Chimie & Industrie*, 22 [8, 9] 123–31 (1947). — The work of Winter, McMaster, and other authors has established that in the so-called transformation interval between temperatures $T_\alpha < T_\beta$, refractive indices n_T between n_α (high index, low temperature) and n_β (low index, high temperature) are stable but only reached from higher or lower indices originally present at a rate rapidly decreasing from T_β to T_α. If the originally present index was lower ($\beta \rightarrow \alpha$ transformation) the rates of transformation at constant temperature are those of a bimolecular reaction $X + X \rightarrow X_2$ with the exception of the very beginning of the experiment. The reverse reaction $\alpha \rightarrow \beta$, i.e., the decrease of a higher index stable at a lower temperature than that of the experiment, is found to be more complex than the monomolecular reaction $X_2 \rightarrow X + X$. These conditions were subjected to an experimental investigation in which small samples of the St. Gobain crown glass 7379 (72.06 SiO_2, 0.43 R_2O_3, 11.45 CaO, 15.48 Na_2O) were converted to the T_α and T_β stages and then held at various temperatures between those temperatures until equilibrium was reached. The highest index (at 329°C.) was found to be $n = 1.51909$, and n_α was extrapolated to 1.51910. The lowest index, n_β, was found to be 1.51798. The series of equilibrium indices between these extremes and the corresponding temperatures and times required to obtain these indices starting from n_β were as follows:

T (°C.)	n_T	Time (hr.)	Rate constants, K
329	1.51909	1[illegible]	0.[illegible]
400	1.51908	[illegible]	0.0181
420	1.51907	280	0.0283
440	1.51905	100	0.0467
460	1.51901	20	0.1873
480	1.51893	3	0.1789
500	1.51879	1	0.3827
540	1.51833	[illegible]	2.2800
(576)	(1.51798)	(0)	(∞)

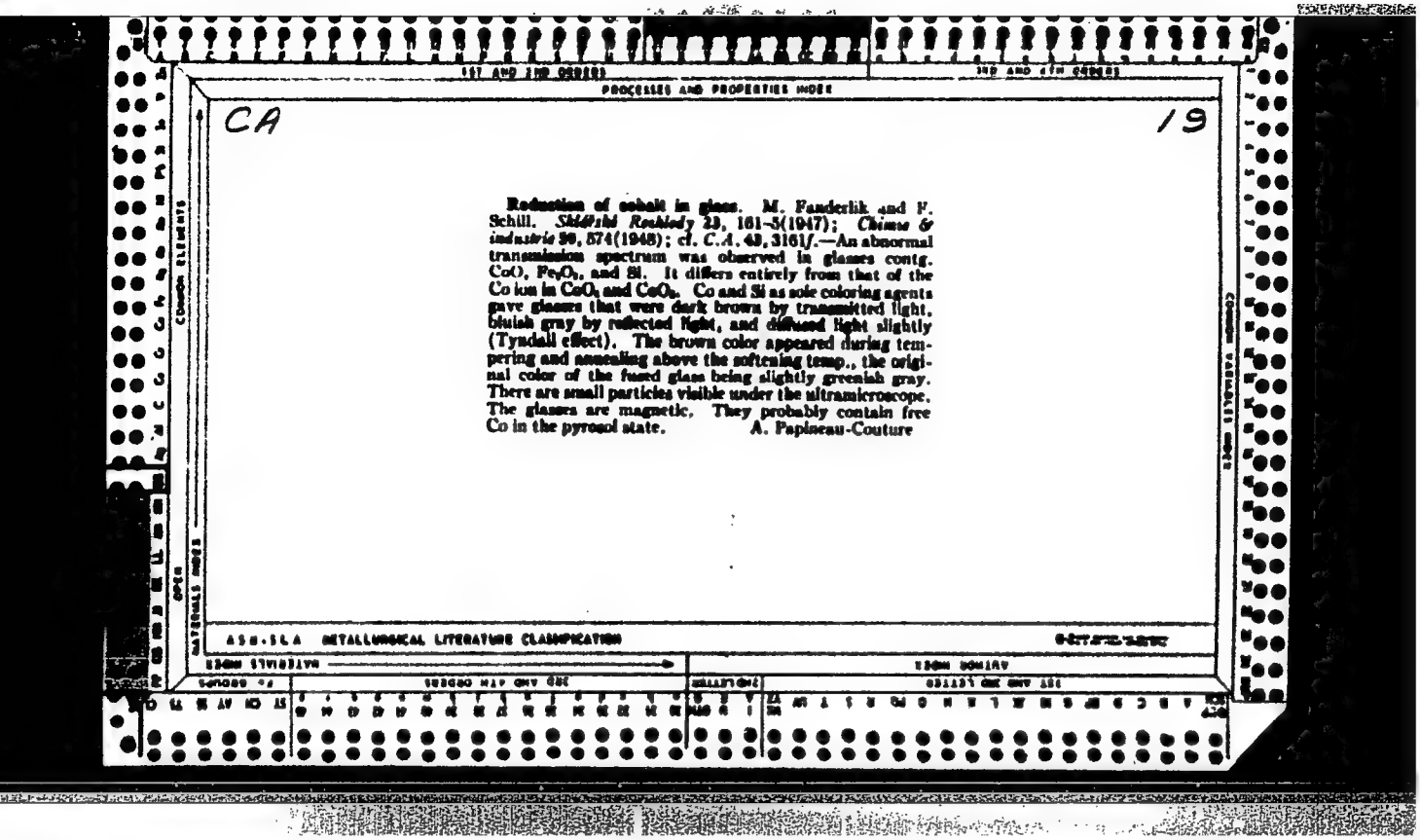
The evaluation of rate constants, $K = C(\beta)\ C(\alpha) = K_1(\alpha \rightarrow \beta)/K_2(\beta \rightarrow \alpha)$, of the chemical reaction showed that the process was of the second order, except for the very beginning. If K_2 is taken as 1 from McMaster's equation $1/(N_\infty - N) - 1/(N_\infty - N_0) = At$, where $N_\infty = N_T$ at equilibrium, N = the current, and N_0 = the initial index, K_1 for the transformation $\alpha \rightarrow \beta$ could be calculated and was found in disagreement with the experiment. The $\alpha \rightarrow \beta$ reaction is, on principle, of the monomolecular type

$X_1 \rightleftharpoons X + X$; the lower the temperature becomes, however, the more an upward bend of the curves is observed. The use of McMaster's relation, including a first-order reaction and a simultaneous bimolecular counter reaction, does not give good correspondence over the entire range, in agreement with McMaster's findings on the glasses studied by him. For the full information summarized in the above table of equilibrium indices, reference is made to the tables and curves of the text. Rates for temperatures higher than 500°C. have been obtained by the evaluation of changes in the coefficient of expansion. Large changes measurable with high precision are observed in the absorption curve of crown glasses containing 0.25% NiO and subjected to similar time-temperature experiments. The results will be published in a later paper. N J K

C

V - glass

Disintegration of toughened tumblers. M. Fandrlik *Sklářské Rozhledy*, 23 [4] 57–66 (1947) (summary in English and Russian).—Toughened glass tumblers produced by sudden cooling in a suitable cooling bath are four to five times mechanically and thermally stronger than annealed tumblers. In the practical use of such tumblers, during their production, and in storage there appear from time to time spontaneous shatterings without apparent cause. It is not possible to find the cause of this phenomenon by studing the fractured pieces, which are very small and give no picture of the total distribution of the internal strains in the tumbler. The reason is partial further transformation of the toughened (not stabilized) glass at normal temperatures; this transformation is very slow. From the standpoint of control during the manufacturing process, the relation of stability of the product and of internal strains is decisive and can be established only by statistical methods. F. describes methods of measuring internal strains, for the determination of isoclines, for the direction of principal strains, and for graphical integration. The results from 200 tumblers, the internal strains of which were determined immediately after manufacture and which were observed during a period of 2 yr., with each disintegration noted, are summarized as follows: (1) The spontaneous disintegration of tumblers can be attributed not to the distribution of the internal strains but to the absolute values of the strains. (2) As a security limit there can be specified from the statistical results: in the bottom 300 mg cm. and in the side wall 225 mg cm. These limits concern tumblers of 200 to 300 cm.^{3} content with a bottom thickness of 6 to 9 mm. and a side wall thickness of 2 to 4 mm. 10 figures



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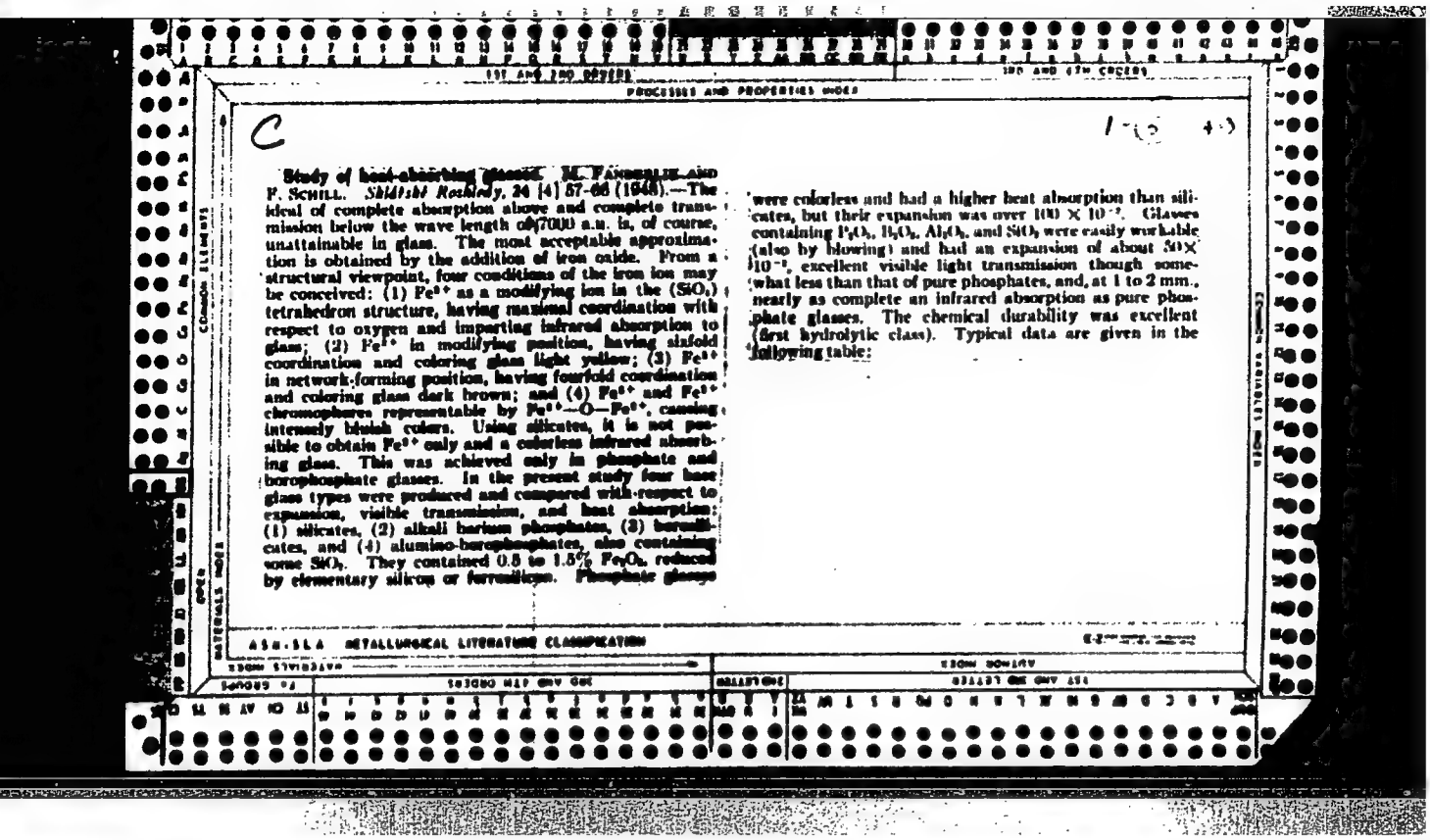
CA 19

Reduction of cobalt in glass. M. Fanderlik and F. Schill. *Sklářská Rozhledy* 23, 161–5(1947); *Chimie & industrie* 59, 574(1948); cf. *C.A.* 43, 3161*f*.—An abnormal transmission spectrum was observed in glasses contg. CoO, Fe_2O_3, and Si. It differs entirely from that of the Co ion in CoO_2 and Co_2O_3. Co and Si as sole coloring agents gave glasses that were dark brown by transmitted light, bluish gray by reflected light, and diffused light slightly (Tyndall effect). The brown color appeared during tempering and annealing above the softening temp., the original color of the fused glass being slightly greenish gray. There are small particles visible under the ultramicroscope. The glasses are magnetic. They probably contain free Co in the pyrosol state. A. Papineau-Couture

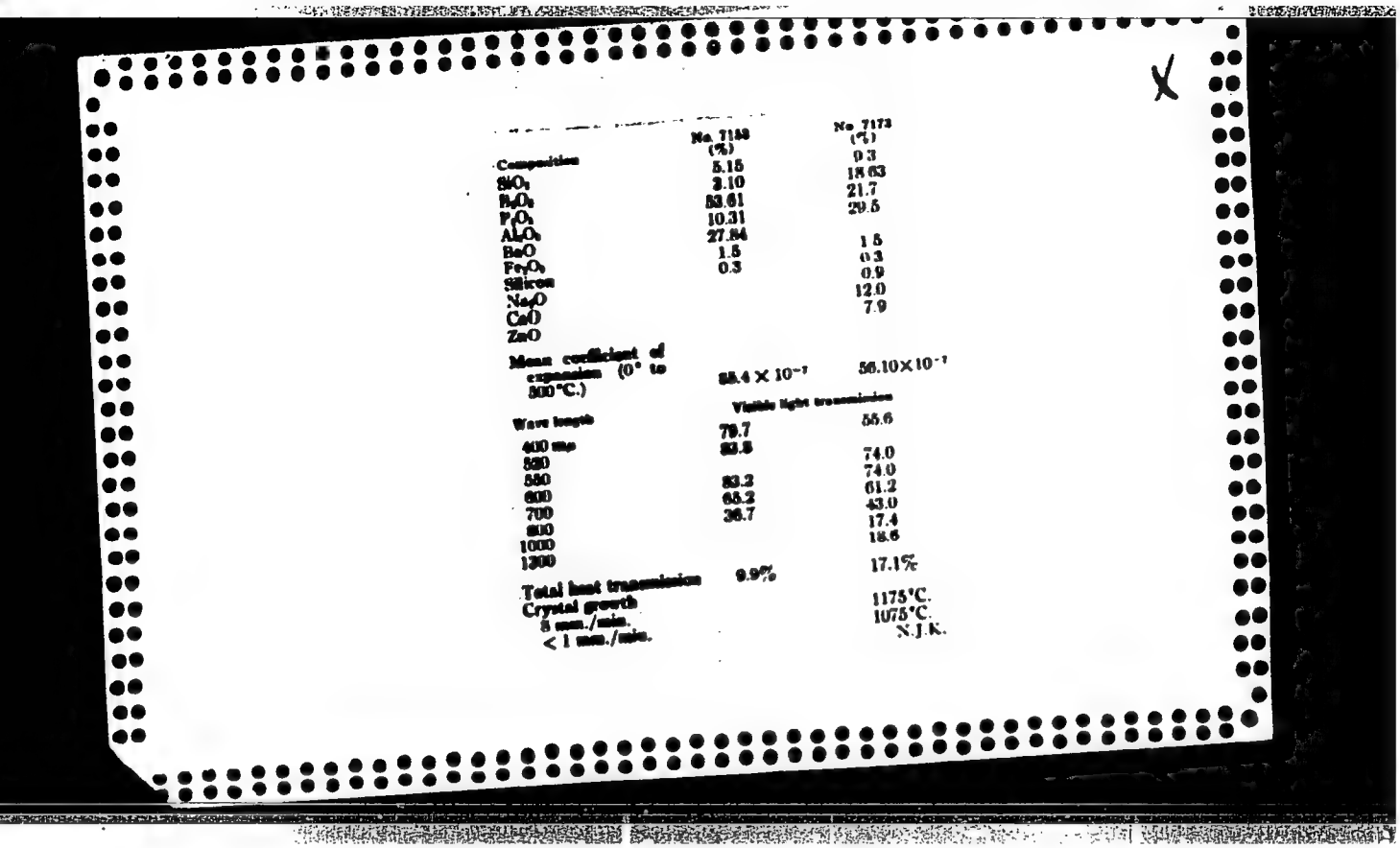
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



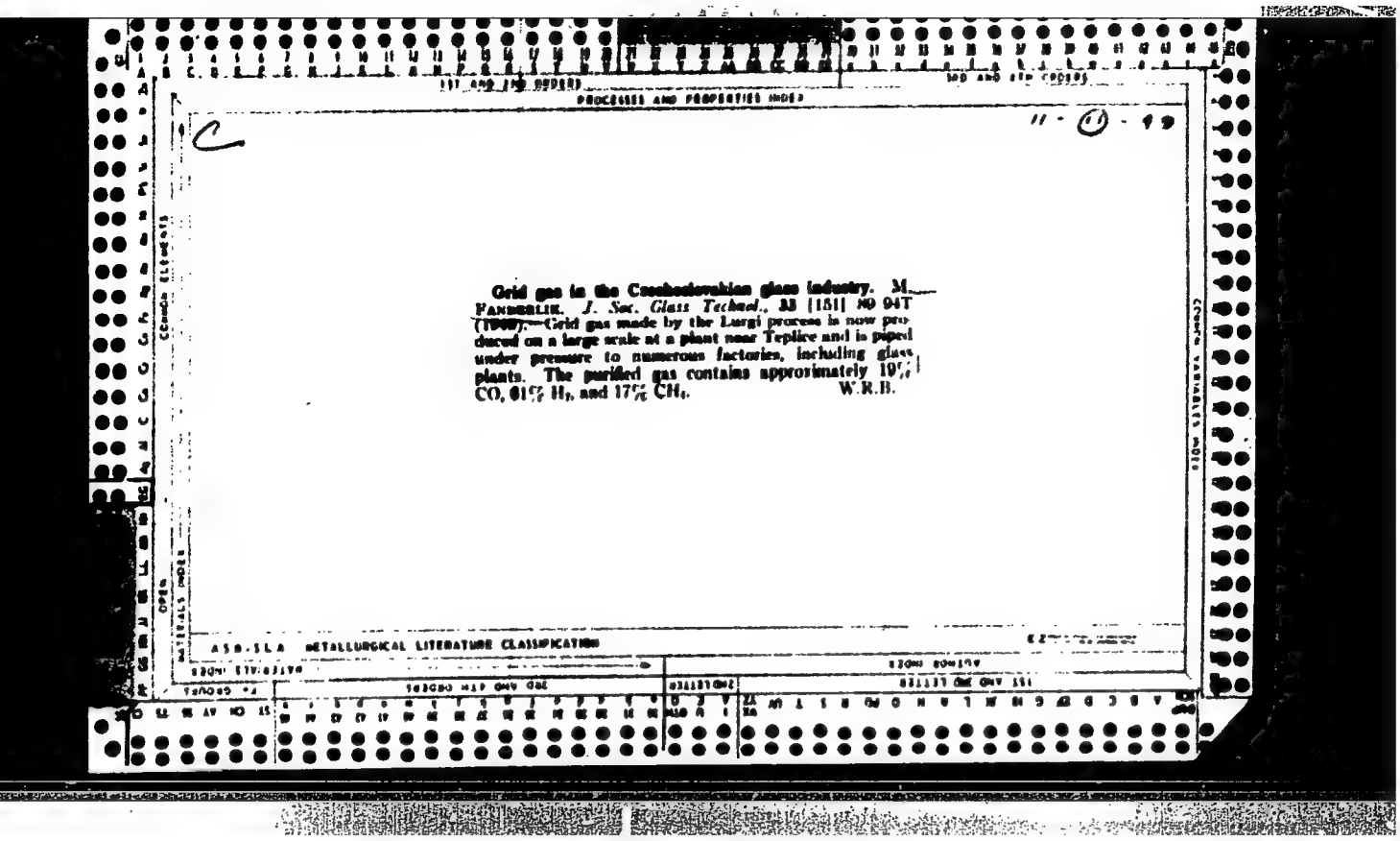
C

Study of heat-absorbing glasses. M. Faissler and P. Schill. *Silikat Technik*, 24 [4] 57-60 (1948).—The ideal of complete absorption above and complete transmission below the wave length of 7000 a.u. is, of course, unattainable in glass. The most acceptable approximation is obtained by the addition of iron oxide. From a structural viewpoint, four conditions of the iron ion may be conceived: (1) Fe^{3+} as a modifying ion in the (SiO_4) tetrahedron structure, having maximal coordination with respect to oxygen and imparting infrared absorption to glass; (2) Fe^{2+} in modifying position, having sixfold coordination and coloring glass light yellow; (3) Fe^{3+} in network-forming position, having fourfold coordination and coloring glass dark brown; and (4) Fe^{2+} and Fe^{3+} chromophores representable by Fe^{2+}—O—Fe^{3+}, causing intensely bluish colors. Using silicates, it is not possible to obtain Fe^{2+} only and a colorless infrared absorbing glass. This was achieved only in phosphate and borophosphate glasses. In the present study four base glass types were produced and compared with respect to expansion, visible transmission, and heat absorption: (1) silicates, (2) alkali barium phosphates, (3) beryllosilicates, and (4) alumino-borophosphates, also containing some SiO_2. They contained 0.5 to 1.5% Fe_2O_3, reduced by elementary silicon or ferrosilicon. Phosphate glasses were colorless and had a higher heat absorption than silicates, but their expansion was over 100×10^{-7}. Glasses containing P_2O_5, B_2O_3, Al_2O_3, and SiO_2 were easily workable (also by blowing) and had an expansion of about 50×10^{-7}, excellent visible light transmission though somewhat less than that of pure phosphates, and, at 1 to 2 mm., nearly as complete an infrared absorption as pure phosphate glasses. The chemical durability was excellent (first hydrolytic class). Typical data are given in the following table:

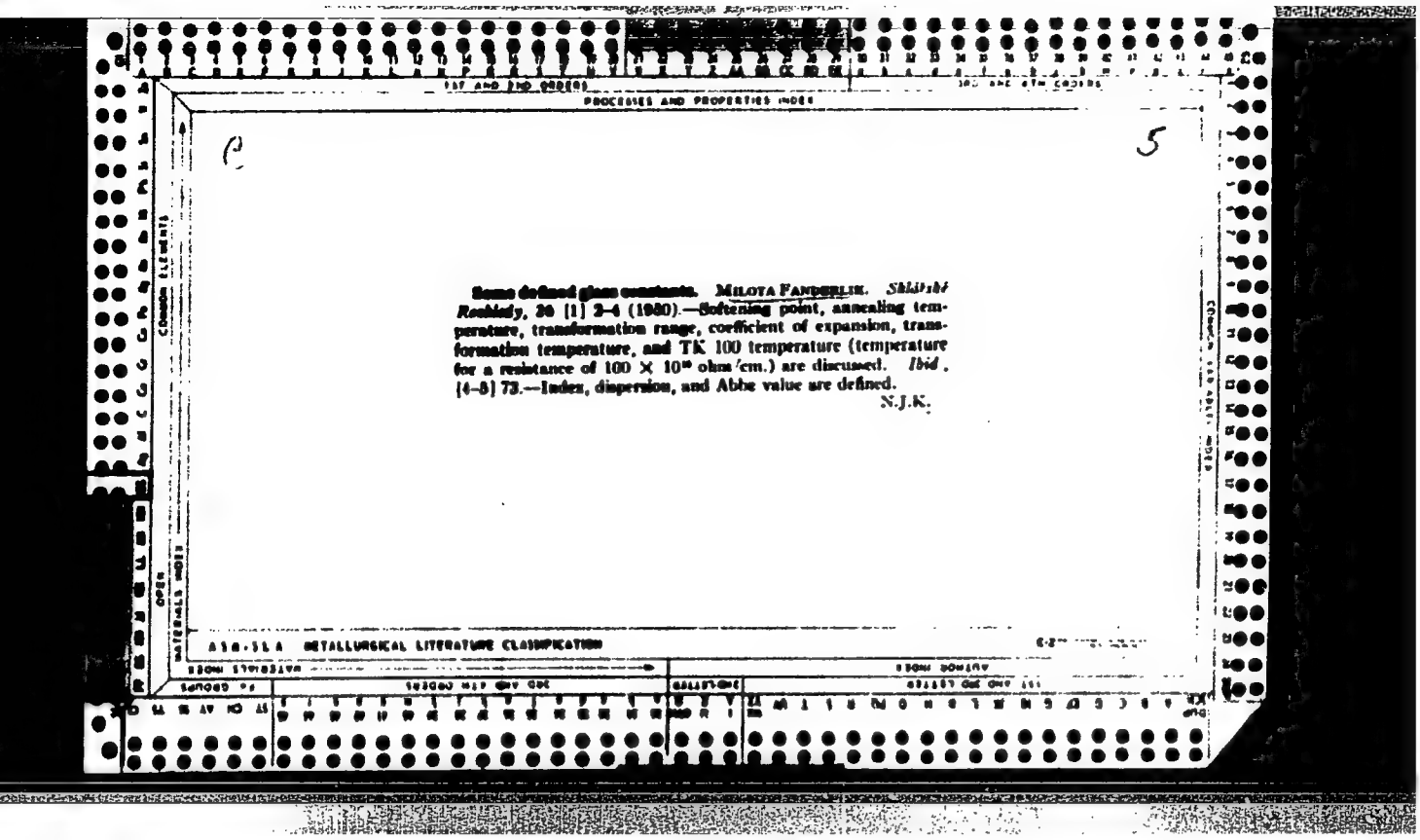
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Composition	No. 7158 (%)	No. 7173 (%)
SiO_2	5.15	9.3
B_2O_3	3.10	18.63
P_2O_5	53.61	21.7
Al_2O_3	10.31	29.5
BaO	27.84	
Fe_2O_3	1.5	1.5
Silicon	0.3	0.3
Na_2O		0.9
CaO		12.0
ZnO		7.9
Mean coefficient of expansion (0° to 300°C.)	88.4×10^{-7}	56.10×10^{-7}
	Visible light transmission	
Wave length		
400 mμ	79.7	55.6
500	83.5	74.0
550		74.0
600	83.2	61.2
700	65.2	43.0
800	36.7	17.4
1000		18.6
1300		
Total heat transmission	9.9%	17.1%
Crystal growth		
5 mm./min.		1175°C.
< 1 mm./min.		1075°C.
		N.J.K.



Grid gas in the Czechoslovakian glass industry. M. Pannerlik. *J. Soc. Glass Technol.*, 33 [151] 89-94T (1949).—Grid gas made by the Lurgi process is now produced on a large scale at a plant near Teplice and is piped under pressure to numerous factories, including glass plants. The purified gas contains approximately 19% CO, 61% H_2, and 17% CH_4. W.R.B.



Some defined glass constants. MILOTA FANDERLIK. *Silikáty Rozhledy*, 20 [1] 2–4 (1980).—Softening point, annealing temperature, transformation range, coefficient of expansion, transformation temperature, and TK 100 temperature (temperature for a resistance of 100 × 10^{6} ohm/cm.) are discussed. *Ibid.*, [4–5] 73.—Index, dispersion, and Abbe value are defined.

N.J.K.

FANDERLIK, M.

Two important conferences of scientists on the study of the structure of glass and silicates. p. 166

SKLAR A KERAMIK. (Ministerstvo lehkeho prumyslu)
Vol. 4, no. 6, June 1954

Praha, Czechoslovakia

East European Accessions List Vol. 5, No. 1 January 1956

VANDERLIK, M.

Sbornik praci z technologie silikatu (Collection of Works on the Technology of Silicates); a review, p. 104, SKLAR A KERAMIK (Ministerstvo lehkeho prumyslu) Praha, Vol. 4, No. 4, Apr. 1954

SOURCE: East European Accessions List (EEAL) Library of Congress, Vol. 4, No. 12, December 1955

Use of radioactive isotopes in the glass industry. p. 244. SKLAR A KERAMIK. (Ministerstvo lehkeho prumyslu) Praha. Vol. 5, no. 11, Nov. 1955. Vol. 5, no. 11, Nov. 1955.

SOURCE: East European Accessions List, Vol. 5, no. 9, September 1956

FANDERLIK, M.

Glass as a protective material against electromagnetic and corpuscular radiations with special attention to nuclear radiations.

p. 9 (Veda a Vyzkum v Prumyslu Sklarskem. No.1, 1956, Praha, Czechoslovakia)

Monthly Index of East European Accessions (EEAI) LC. Vol. 7, no. 2, February 1958

15

Coloring of glass by nickel. Jiří Nebřenský, Miloš Fanderlik, and Jiří Kocík (Glass Research Inst., Hradec Králové, Czech.). Věda a výzkum v průmyslu sklářském 2, 23–32(1956)(English summary). The influence of glass compn. on the color produced by the addn. of Ni^{++} salts was studied. The addn. of Si to Ni-contg. glass I resulted in formation of a gray (Ni-pyritan) color. I contg. Na_2O, $Na_2O + K_2O$, and K_2O resp. gave absorption curves entirely analogous to absorption of I measured at 20 ... and 700°, resp. A continuous change of absorption curves of I contg. different base ingredients was explained by the change in forces binding Ni to the glass structure. Green transparent glass was prepd. from I (51.2 SiO_2, 18.3 B_2O_3, 8.3 Al_2O_3, 7.8 K_2O, 14.4 KHF_2, 1.5 NiO) by cooling it first rapidly below 500° (yellow brown) and then heating it to 550–650° (green). The process was analogous to the formation of Se-ruby glass and a formation of a Ni compd. (possibly NiO_2) was responsible for the color change. A. B. iß.

FNN

FANDERLIK, MILOTA

Czechoslovakia/Chemical Technology - Chemical Products and Their Application. Silicates. Glass. Ceramics. Binders, I-9

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62262

Author: Fanderlik, Milota

Institution: None

Title: Chemical Control of Glass Production

Original Periodical: Chemisace sklarske vyroby, Sklar a ceramik, 1956, 6, No 3, 52-54; Czech

Abstract: It is proposed to organize a systematic control of raw materials, scrap, fuel, refractory supplies and other auxiliary materials.

Card 1/1

FANDEL'IK, V.

The structure of glass.

P. 3, (Silikaty) Vol. 1, no. 1, 1957, Praha, Czechoslovakia

SO: Monthly Index of East European Accessions (EMAI) Vol. 6, No. 11 November 1957

FANDERLIK, M.

FANDERLIK, M. Draft of the CSN 70 0020 standard for defects in glass and glassware. p. 33.

Vol. 6, no. 2, Feb. 1957
NORMALISACE
TECHNOLOGY
Czechoslovakia

So: East European Accession, Vol. 6, No. 5, May 1957

Fanderlik, M.

Fanderlik, M. Glass research in the Soviet Union. p. 78.

Vol. 7, no. 3, Mar. 1957
SKLAR A KERAMIK
TECHNOLOGY
Czechoslovakia

So. East European Accessions, Vol. 6, May 1957
No. 5

FANDERLIK, M.

CZECHOSLOVAKIA/Chemical Technology. Chemical Products and Their Application. Part 2. - Ceramics. Glass. Binders. Concretes. - Glass. H

Abs Jour: Ref. Zhurnal Khimiya, No 21, 1958, 71537.

Author : Milota Fanderlik.
Inst :
Title : Theoretical Premises of Glass Grinding (Preston's Theory).

Orig Pub: Sklář a keramik, 1957, 8, No 2, 36-37.

Abstract: The theory of glass grinding developed by Preston is discussed. "Chain" or "cascade" fissures appear on the glass surface (S) under the influence of the pressure of a hard ball or of the sliding of a needle. The depth and the arrangement of these fissures depend on the pressure of the hard body,

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CZECHOSLOVAKIA/Chemical Technology. Chemical Products and Their Application. Part 2. - Ceramics. Glass. Binders. Concretes. - Glass. H

Abs Jour: Ref. Zhurnal Khimiya, No 21, 1958, 71537.

tween glass grinding and glass polishing. Mechanical removal of glass takes place in the process of grinding and the phenomena of swelling. hydrolysis and of other chemical changes of the glass surface are utilized in the process of polishing besides the mechanical removal.

Card : 3/3

45

CZECHOSLOVAKIA/Chemical Technology. Chemical Products and Their Application. Part 2. - Ceramics. Glass. Binders. Concretes. - Glass. H

Abs Jour: Ref. Zhurnal Khimiya, No 21, 1958, 71538.

Author : Milota Fanderlik.
Inst :
Title : Mechanical Theories of Glass Polishing. Views of Klemm, Smekal and Bruche-Popp.

Orig Pub: Sklář a keramik, 1958, 8, No 4, 100-101.

Abstract: No abstract.

Card : 1/1

15(6)
AUTHORS: Fanderlik, M., Dvorak, J. SOV/72-59-2-17/21

TITLE: Decrease of Glass Transparency Under the Influence of Gamma Radiation and Its Regeneration (Umen'sheniye prozrachnosti stekol pod deystviyem gamma-izlucheniya i ikh regeneratsiya)

PERIODICAL: Steklo i keramika, 1959, Nr 2, pp 45-46 (USSR)

ABSTRACT: This is the translation of a Czech-language-paper, published in Veda a vyzkum v prumyslu sklarskem, Nr 4, Praha, 1958, pp 81.
The translator's name is not mentioned. There is 1 table.

Card 1/1

FANDELIK, M.

Homogenizing optical glass by mixing. p. 307.

SYLAR A KERAMIK. (Ministerstvo lehkeho prumsylu) Praha, Czechoslovakia,
Vol. 9, no. 10, Oct. 1959.

Monthly List of East European Accessions (EEAI) LC, Vol. 9, no. 1,
Jan. 1960.

Uncl.

FANDERLIK, M.; Vcelak, J.

Czechoslovak Glass Exhibition in Moscow. p. 255.

SKLAR A KERAMIK. (Ministerstvo lehkeho prumyslu) Praha, Czechoslovakia, Vol. 9, no. 8, Aug. 1959.

Monthly List of East European Accessions (EEAI) LC, Vol. 9, no. 1, Jan. 1960.

Uncl.

30(7), 15(2) CZ/13-60-1-16/26

AUTHOR: Fanderlik, Milota, Professor, Doctor, Engineer

TITLE: Third General Conference on the Structure of Glass in Leningrad

PERIODICAL: Sklář a Keramik, 1960, Nr 1, pp 23 - 24 (CSR)

ABSTRACT: This is a list of 96 delegates and their contributions; they participated in the 3rd general conference on the structure of glass in Leningrad, from November 16 to November 20. This conference was convened by the Soviet Academy of Sciences and the General Chemical Society. A brochure on this conference will be published at a later date.

Card 1/1

FANDERLIK, Milota, prof.

Czech glass. Priroda 49 no.5:44-49 My '60.
(MIRA 13:5)

(Glass manufacture)

FANDERLIK, Milota, prof., inz., dr.

"Technical glasses" by Milos B. Volf. Reviewed by Milota Fanderlik. Sklar a keramik 12 no.3:91-92 Mr '62.

Z/012/63/000/001/001/001
E202/E192

AUTHOR: Fanderlík, Milota

TITLE: Solarization of photoplastic glasses

PERIODICAL: Silikáty, no.1, 1963, 46-51

TEXT: Photosensitive glasses containing 72.50% SiO_2, 12.50% Li_2O, 5.00% K_2O, 10.00% Al_2O_3, 0.02% CeO_2 and 0.01% Au or 0.08% Ag were studied by measuring the depth of relief in order to determine the photonucleation and subsequent recrystallization phenomena of the irradiated areas. Recrystallized glasses were further treated with a 10% HF etching solution. The samples (25 x 35 x 4 to 5 mm thickness) were exposed stripwise to an ultraviolet mercury discharge lamp of 75 W at a distance of 90 - 270 mm. On gradual irradiation with doses increasing in geometrical series, it was found that after a certain cumulative dose of irradiation, solarization was produced. The author found that the relief increases at the beginning with the increasing doses of irradiation but after reaching a maximum it starts decreasing. No experimental explanation of the rise of solarization has been given but it has been suggested that a large dose of

Card 1/2

Solarization of photoplastic glasses

Z/012/63/000/001/001/001
E202/E192

irradiation produces an excess of electrically neutral gold or silver atoms, so that they can no longer grow to nuclei large anough to initiate the crystallization of $Li_2O \cdot SiO_2$. There are 2 figures and 4 tables.

ASSOCIATION: Státní výzkumný ústav sklářský, Hradec Králové
(State Research Institute for Glass, Hradec Králové)

SUBMITTED: August 25, 1961

Card 2/2

FANDERLIK, M.

"Industrial furnaces and oil heating, refractory building materials." Reviewed by M. Fanderlik. Sklar a keramik 13 no.3:84 Mr '63.

FANDERLIK, M., prof., inz., dr.

"Glass quality control" by Hans Jebsen-Marwedel. Reviewed by M. Fanderlik. Sklar a keramik 13 no.3:84 Mr '63.

FANDERLIK, Milota, prof., Ing. dr.

New standardized measurement units. Sklar a keramik 13 no.9: 242-243 S'63.

FANDERLIK, M., prof., inz. dr.

"Decoration of glass" by W. Nowotny. Reviewed by M. Fanderlik.
Sklar a keramik 14 no.12:464 D '64.

BRANNIKOV, A.G., ZHIRNOV, L.V., LEBEDEVA, L.S., FADDEYEV, A.A.

Marking saiga in the western Caspian Sea region. Migr.zhiv. no.1: 179-185. (MIRA 13:6)

1. Moskovskiy gorodskoy pedagogicheskiy institut, Gosudarstvennyy Astrakhanskiy zapovednik.
(Caspian Sea region--Saiga) (Animals, Marking of)

PANDEYEV, A.A.

Some data on the reproduction of saiga. Biul.MOIP. Otd.biol. 64 no.5:133 S-O '59. (MIRA 13:6)
(VOLGA VALLEY—SAIGA)

FAIDEYEV, A.A.

Lambing of saigas in the right-bank area of the Volga Valley.
Zool.zhur. 39 no.6:906-911 Je '60. (MIRA 13:7)

1. Department of Zoology, Moscow Town Pedagogical Institute, and Laboratory of Saiga Investigation, Astrakhan Preservation.
(Alata-Burata region--Saiga)

BANNIKOV, A.G., prof.; ZHIRNOV, L.V.; LEBEDEVA, L.S.; FANDEYEV, A.A.; NASIMOVICH, A.A., red.; NECHIPORUK, L.P., red. izd-va; TRUKHINA, O.N., tekhn. red.

[Biology of the saiga] Biologiia saigaka. Moskva, Izd-vo sel'khoz. lit-ry, zhurnalov i plakatov, 1961. 335 p. (MIRA 15:3)

(Saiga)